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THE NAVAJO.

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The Navajo, or, as they call themselves, Tin-néh, meaning "the people," constitute the most flourishing branch of that vigorous Athapascan stock which is spread in widely separate tribal communities on the Pacific slope, from Alaska to Mexico.

An extensive scope of land, embracing northeastern Arizona and the adjoining northwestern corner of New Mexico, is held by them as a reservation, with the Hopi, or so-called Moki, a small pueblo tribe, occupying its southwestern corner. These latter live in compact villages of stone houses, built on rocky promontories projecting from the higher table-lands. They have long been on fairly amicable terms with their neighbors, yet in some of their habits traces of an earlier hostile period still survive. They persist in clinging to their secluded habitations on mesa points of difficult access; they nightly shut up their flocks in little pens on cliff ledges close to their houses; and although the Navajo are constantly trafficking at their villages, it is rare for a Hopi to venture far among them, nor do the scornful insults of the Navajo ever provoke a Hopi to retaliate.

The Table-lands.—This table-land region, although composed of horizontal sandstone measures, is by no means a mere elevated plain of level uniformity, for the area occupied by the Navajo displays a wide diversity of features. On the boundary line of the two territories it is traversed from south to north by the Tunicha mountains, a lofty range covered with magnificent pine forests, and wide plateaus lie folded along its flanks, through which solemn, cliff-walled cañons wind in tortuous courses into the heart of the range.

To the north and west, along the course of the San Juan, which forms the northern boundary of the Navajo country, broken ranges, occasionally clustering in high volcanic domes, confine the river in deep, gloomy gorges; and toward the south low sloping hills rise in straggling ridges covered with dwarfish piñon and gnarly juniper.

The waters of a primeval period have eroded spacious valleys through the great plateau which originally overlaid the entire region, and smaller defiles intersect it in every direction, cutting it up into numerous separate mesas, with steep, rocky cliffs sharply outlining their irregular forms. The principal valleys extend for long distances; one of them, called the Tchi-ni-li, stretches along the west side of the Tunicha range, exposing a broad, level pass across the reservation from its southern limit to the San Juan river and beyond. To the traveler following the low-lying trails the region presents itself as a land of cliff-walled, bare, sandy valleys, while to one upon the higher plateaus it offers an immense landscape of undulating plain, studded with woody hills, and viewed from the mountain-tops the land seems everywhere cleft into a network of jagged cañons.

In the few weeks of early summer the table-lands are seen in their most attractive guise. High mesa plateau and low sandy valley become meadow-like with short grassy verdure, and richly adorned with flowers in profusion, blooming in surprising variety and beauty; marigold, larkspur, daisy and lily, and such familiar acquaintances mingling among countless clusters of less known flowering plants and fragrant herbage. The tracts of desert now strive to conceal their arid nature; the sagebrush contrives to imbibe sufficient sap to brighten its crisp gray leaves with a tint of green, and the furzy greasewood hangs in flakes of yellow bloom. Straggling beds of prickly pear spread out in exasperating luxuriance, and each thorny, green-skinned tablet, bursting with stemless blossoms, seems grafted with rosebuds. Vagrant pariahs of cactus kin are also glowing with rich-hued flowers of surpassing brilliance, crimson, pink, and gold, gorgeous and odorless. But within the broad horizon no winding streams flow through the valleys; no brook trickles down the mesa side; not a single glimpse of running water may be discovered. Valley and cliff and mesa level lie parching under a hot sun in a cloudless, unchanging sky, and this fair but arid landscape leaves a cheerless impression.

In July and August sudden, heavy showers of short duration

are common, and the sandy soil absorbs enough moisture to nourish vegetation. But the deep channels carved through mesa and valley carry off almost the entire rainfall in swift rushing torrents to the profound cañons of the San Juan and the Colorado. Water from the melting snow, and of course a portion of the rainfall, percolates through the porous sandstone of the surface measure, and issues in numerous small springs along the edges of the mesa cañons, their locality being usually indicated by the convergence of trails and the trampled bareness of the vicinity.

Pastoral Life.—The region is specially adapted for sheep culture, and the Navajo equally well adapted for shepherds, coinciding circumstances which have happily influenced their destiny, transforming them wholly into a peaceable, pastoral tribe. Every family is possessed of a flock of sheep and goats and a band of horses, so that the condition of the tribe is not only far removed from hardship, but is really that of comparative affluence.

To maintain the flocks in sufficient pasture they move them to different grazing grounds at least twice a year, sometimes oftener, these movements being regulated by the condition of the grass and the supply of water. In a dry season many of the smaller springs cease to flow, and besides that, when flocks are held too long in one place, their close cropping destroys the vegetation, enforcing an abandonment of the locality for two or three years, by which time, if left entirely alone, the grasses again recover. The usual practice is to take the flocks up to the higher plateaus and mountains in summer, grazing in the neighborhood of springs or an occasional rain pool, and moving down to the valleys and lower wooded mesas in the winter, when both sheep and shepherds depend, to a great extent, upon the snow for their water supply. By this means they are able to partially utilize the pasturage in the broad waterless valleys, retiring as the summer advances to the grassy uplands that have been fertilized by the melting snow.

This shepherd's life, of course, prevents them from dwelling in large communities; perhaps some desirable watering place may be occupied by as many as ten or twelve families, usually of the same kindred, but commonly fewer than that number frequent the same locality, and it is rare to see more than three or four huts together. A few of the larger cañons containing small streams and patches of arable land are occupied permanently; one of these, called the Tse-yi, is famous for the numerous ancient dwellings in its cliffs,

its peach orchards, and other memorials of its former house-building occupants. This is a specially attractive summer resort, and is the scene of many festive concourses, scattered members of the different families gathering there from every part of the reservation to feast together for ten days or a fortnight upon green corn, watermelons, and peaches.

Aside from the cañon localities the spot chosen for a dwelling place is either some sheltering mesa nook or southward hill slope in the edge of a piñon grove, securing convenient fuel, and not too far from water. But the Navajo seldom lives very close to a spring, a survival of an old habit of their former hunting life when they kept away from the springs as much as possible so as not to disturb the game when coming to water. This choice of secluded dwelling place is apt to mislead a stranger who might cross the reservation and deem it quite unoccupied; and yet it is estimated there are upwards of 15,000 persons within its limits.

But likely enough a family may be met moving with their flock of sheep and herd of ponies to fresh pasture. The *hos-teen*, as the head of a family is conventionally called, drives before him the band of ponies, which, as a rule, are a degenerate lot of "scrubs," small bodied, big headed, and ungainly. He carries a bow and quiver of arrows slung at his side, and probably a rifle and revolver, for the coyotes, and now and then a wolf, make havoc among their sheep, and against these depredators they now resort to the more effective modern weapons. He carries on his saddle two or three blankets and a buckskin or two, but is not very heavily loaded, as he has to chase the straying ponies and keep them to the trail. Following hard behind comes the bleating flock of sheep and goats, meandering and nibbling as they are urged slowly along by the dust-grimed squaw and her children. Two or three of the more tractable ponies carry burdens of household gear stuffed in buckskin pouches and blankets; a bag or two of corn; a bundle of washed wool, and the primitive weaving apparatus; baskets and wicker water-bottles, and often a little imp of two or three years will be perched securely on top of the miscellaneous pyramid. Three or four dogs are an invariable accompaniment of such a caravan, sorry looking curs, but invaluable helpers to the children while herding the flocks.

Land Tenure.—These changes to fresh pastures occasionally lead a family to a neighborhood in which they have never lived before,

for the constant increase of their flocks necessitates wider movements than formerly.

The springs and waters are generally regarded as common property of the tribe, but the arable spots in their vicinity are distinctly held by individuals as real property. The flocks of these families consume all the surrounding pasture, so that virtually many of the waters are held as family property by the people who live nearest them. But in fact the extremely limited water supply of the region has grown to be of the gravest concern to the Navajo, and speedily they must either construct artificial reservoirs or curtail their flocks.

In an earlier time, when the organization of the gentes or clans was more compact, a scope of country was roughly parceled out and held as a clan ground, and many of the clans take their names from these localities. Vivid traditions are still extant of those early times before the Spaniard brought sheep and horses to their land, when they lived on the spoil of the chase, on wild fruits, grass seeds, and piñon nuts. Indian corn, however, was known to them apparently from the earliest times, but while they remained a mere hunting tribe they detested the labor of planting. But as their numbers increased, the game, more rigorously hunted, became scarce, and to maintain themselves in food necessity forced them to a more general cultivation of corn and the regular practice of planting became established among them.

There are now no defined boundaries of these ancient clan grounds, but they are still in a vague way recognized and spoken of as "my mother's land," for the Navajo traces his ancestry only through his mother. Families cling to localities and accustomed sections not very far apart, and when compelled to move their flocks to a strange neighborhood they do not seek it as a matter of right, but of courtesy, and the movement is never undertaken until after satisfactory arrangements have been effected with the families already living there.

Primitive Architecture.—These matters adjusted, when the family arrives the husband's first care is to build a dwelling, so he chooses a suitable place, and all the neighbors come to help him.

They have two distinct types of dwellings, the bough arbor for summer and the earth-covered hut for winter, the former for temporary occupancy merely, but the hut is looked upon as the family home. Many of the summer shelters are extremely primitive, being

mere wind-breaks of rudely piled brushwood; but other forms of more careful construction are common—(1) boughs in foliage set round in a circle near some conveniently spreading cedar trees, which are utilized to form a latticed roof for the enclosure; (2) simple scaffolds framed around with interlacing boughs; and (3) many quaint little sheds made of branches leaning upon a straight pole supported by forked uprights.

Their winter dwellings also display different crude methods. Trunks of stunted cedar and piñon trees, set with their tips leaning together like a tripod, are the ordinary house frame. Another has stout uprights supporting a flat roof of poles, with sloping sides of tree limbs; in another the tree limbs are laid around horizontally, in a circle, tapering at the height of six or seven feet, resembling a large, misshapen beehive. Near some of the water-courses small coverts are dug out in the sandy banks, and in the cañon nooks, where small stones are plenty, huts with low, rough walls are occasionally built.

Six forms of the picturesque summer bowers and six of the earth-covered winter dwellings are recognized, each form being known by an appropriate name, but they hold no tradition that they ever lived in caves or skin lodges.

The typical Navajo dwelling is the *hoġan*,* a conical structure of tree trunks and limbs, covered with earth till it looks like an irregular, dome-shaped mound; but it is not by any means thrown together at hap-hazard, for every detail is traditionally prescribed, and the process may be condensed as follows: First, a circle of the required size is slightly excavated to secure additional interior space and a level floor. Three short piñon trees are trimmed, leaving a wide fork at the small end: these are interlocked to form the apex, with the extended butts resting just on the outside of the circular hollow, one end pointing to the south, one to the west, and the other to the north. Two long, straight limbs are laid upon the east side, their smaller ends resting upon the apex, the butts diverging about three feet apart. Two small forked uprights, supporting a horizontal stick about four feet from the ground, are set at the butts of these straight limbs to form lintel- and door-posts, great care being taken to have this doorway face directly to the east. Stout poles and branches are laid closely around between the main timbers,

* The *h* is pronounced as *ch* in German *ich*.

the smaller ends leaning upon the forked apex, and the spreading butts enclosing the circle. A covered projecting doorway is made of straight boughs resting upon the rude door lintel and another stick laid across the two straight limbs which define the entrance. This cross-piece rests about three feet below the apex, which space is left open for a smoke exit, and the doorway thus projects from the east side of the hogan like a dormer window. In cold weather the entrance is closed with a blanket or a skin suspended from the door lintel. Cedar bark is laid over the entire structure, which is then deeply covered with earth. There is no prescribed size for a hogan, but the average dimensions are about seven feet high at the apex and fourteen feet in diameter. This uncouth hut may scarcely be called comfortable; at best it is merely warm and habitable.

House Dedication.—Soon after the completion of a hogan a "house-warming" or dedication is invariably held, which ceremony partakes much of the nature of a religious duty, the presence of a priest, or shaman, being indispensable, and a good round fee is always paid him in sheep, ponies, or other Navajo effects.

The gods are said to have made the first hogan in the form of a dome; from east to west it was spanned with rays of morning and evening sunlight, and from north to south with the arching beams of the rainbow. The Navajo still maintains the form of this mythic hut, and the peculiar virtues deemed inherent in the primal elements and the blessings of the gods who made the first dwelling are still invoked in their "house-songs."

A convenient time is chosen shortly after a hogan has been completed, and all the neighbors and friends of the family are invited to attend its dedication. The lonely spot grows animate with a gathering throng as the guests come scampering in upon their wiry ponies. In the distance these mounted groups lend the needed color tints to a scenery otherwise apt to be sombre; the scarlet mantles and feathery plumes of the men, the blue tunics of the women, the glitter of silver ornaments and gaudy trappings, are vividly displayed against the dull gray stretches of sagebrush. But on close approach the individual stands confessed in very grotesque array; incongruous odds and ends of the white man's clothing sit ill upon him; a fastidious onlooker would pronounce them ill smelling and dirty, and although the men are robust and the women comely, still they show at their best as figures in the landscape.

Family friends and acquaintances meet and exchange greetings; the older men squat around under the trees and discuss their mutual affairs; the young men gather in groups to gamble, and the women prepare food for the night's feast. Fires are lit and sheep are slaughtered and dressed, ribs are skewered on saplings to roast before the fire, and haunches are spitted for broiling on the embers.

Shortly before sunset the housewife grinds some white corn into meal, which she places in a shallow saucer-shaped basket and hands to her husband. He enters the hut, and beginning on the left-hand side of the doorway, thence passing to the south, he successively rubs a little of the meal on each of the principal timbers of the house frame. As he does this he mutters a low prayer to the gods who made the first house; that the timbers may never break and fall upon the inmates; that they may enjoy health and live long beneath them; that food may always be in plenty there; that they may cover increasing possessions, and that ghosts, evil dreams, and all other malign influences may never enter the dwelling. He then sprinkles meal in a circle around the interior, asking the protection of the deities at all the cardinal points, and, going out, he returns the basket of meal to his wife, who then enters, carrying the basket and some firewood. She makes a fire near the center of the hut, and as it begins to burn she sprinkles an offering of meal upon it, and very devoutly utters her traditional prayer:

> Burn serenely, my fire.
> May peace surround my fire.
> My fire prepares my children's food;
> May it be sweet and make them happy.

All now gather within the hut and squat around upon sheepskins spread on the floor, and the women, after setting food vessels among the men, huddle together by themselves upon the north side of the floor space. All help themselves from the jars and basins by dipping in with the fingers; the mutton is broken in shreds and the bones are gnawed and sociably passed from hand to hand. When the feast has been finished and the pots set outside for the dogs to lick, tobacco is produced and cigarettes of corn-husks are rolled, and while every one smokes good-natured jokes and gossip prevail. Presently the "old man of the songs," as the shaman is called, takes his seat under the west timber so as to face the east,

and, shaking his rattle, he begins the following first "song of the house":

Rising Sun! when you shall shine,
Make this house happy.
Beautify it with your beams;
Make this house happy.
God of Dawn! your white blessings spread;
Make this house happy.
Guard the doorway from all evil;
Make this house happy.
White Corn! (the Spirit of) abide herein;
Make this house happy.
Soft Wealth!* may this hut cover much;
Make this house happy.
Male (heavy) Rain! your virtues send;
Make this house happy.
Corn Pollen! bestow content;
Make this house happy.
May peace around this family dwell;
Make this house happy.

The song is joined in by all the men, but the women never sing at social or religious gatherings, although they sing really beautiful songs when a few of them get together by themselves, and they sing very sweetly, for the Navajo women have remarkably soft, pleasant voices. In these ceremonial songs all the men join as a matter of course, and right lustily and vigorously. It is also quite common to hear a primitive style of part singing, some piping in a curious falsetto, others droning a sonorous bass, and not altogether without some approach to harmony. There is considerable melody in some of their tunes, but most of them are spoiled by being pitched at the very top of the voice. The old shaman acts as leader, each shaman having his own group of traditional songs, fetiches, and particular ceremonies, and after he has started a song he listens very closely to hear that the right words are sung.

After singing to the east, other songs are sung to the south, west, and north. These are all in strains very similar to the first one, but as the Navajo assigns different groups of deities to each of the car-

*That is, all articles made of soft materials, as skins, blankets, etc.

dinal points he petitions for different blessings from the different directions. Thus to the west he sings to a mountain deity that the yellow light of sunset may imbue his dwelling with its beautiful influence; that the spirit of yellow corn may sit in his hut; that it may cover much "hard wealth," such as weapons, utensils, and silver and shell ornaments; that the "young rain" (meaning mild showers) may fall around his dwelling. The heavy rain is regarded as the male rain and the gentle showers as the female, and both kinds of moisture are deemed necessary to fertilize. Altogether thirty-two of these songs are sung, and their singing is so timed that the last one ushers in the first gray streaks of dawn, and the visitors then gather in their horses and ride home.

Family Customs.—By common consent the house and all of the domestic gear belong entirely to the wife; the husband owns a few blankets, his saddle and horse trappings, his weapons, ornaments, and other small articles stowed in his own buckskin bag, but all else that the house covers is supposed to belong to the wife. If she does not already possess a corn-field by inheritance or purchase, the husband must plant one for her. Of course she assists in the planting; the man hoes the ground and she drops the seed, but he constructs the rude fence of brush and tree branches. He also plants and takes care of his own corn-field, which may probably be in quite a different locality from his wife's. Where a man has more than one wife, for polygamy is common, it is incumbent upon him to do all of the heavy field-work for them, or to hire it done by some of the young men. The wife owns her own sheep and horses and marriage gives the husband no claim upon them. Aside from her kitchen duties, she has her vertical loom suspended under some convenient tree, where she spins her choice wool and weaves blankets and her own dresses. The children and "younger brothers" usually herd the sheep and the man's principal care is the horse herd.

The popular conception of the Indian squaw in thraldom will not at all apply to the Navajo women; the children belong to her wholly, and she has the entire control of the house life. Occasionally, to be sure, some surly reprobate maltreats his wife, but these outrages are usually followed by a demand for reparation by the woman's family, and this consideration restrains many a gust of passion.

Parents display the fondest affection for their children, rarely resorting to punishment. Members of a family hold one another in

warm regard, and ties of kindred are observed, even to the remote collateral branches, which in civilization have long ceased to be recognized.

Deference is shown to the chiefs and their advice is generally followed, yet there is no real authority inherent to the chiefship. Their laws consist of taboos, religious or superstitious observances, and ancient customs. The two former are still rigidly adhered to, but the latter have lost much of their former consequence, and the younger people are apt to construe them to suit their own convenience. Theoretically they have many punitory and retaliatory laws, but they are now seldom enforced. An essential condition of primitive social life is still very marked among them, namely, the habitual deference of the younger to the elder, and this estimable rule is the effectual binding link of their crude society.

Costumes.—Their typical dress has been almost obliterated since the advent of the trader among them, but as the Navajo now appears he may thus be sketched: Hair all drawn smoothly to the back of the head and done up into a compact club or cue of hour-glass shape; a red silk sash worn as a turban and decorated with feathers and silver ornaments; large silver ear-rings and heavy necklaces of coral, thin discs of white shell and turquoise, and strings of globular silver beads and other ornaments of their own manufacture; a loose sack or short shirt of bright-colored calico, and loose breeches of the same material; belts consisting of large heavy discs or oval plates of silver strung upon a strip of leather are worn both by men and women; low moccasins of buckskin, soled with rawhide, surmounted with leggings of dyed deerskin, which are secured with garters woven of thread in fanciful designs. There is little or no difference between their summer and winter dress, and they constantly wear a heavy woolen blanket as a mantle. Firearms have displaced the bow and arrow, although formerly these were an essential part of every-day costume. A curious relic of the habitual use of the discarded weapon alone survives in their fashion of still wearing the silver-mounted leather wrist-guard as an ornament.

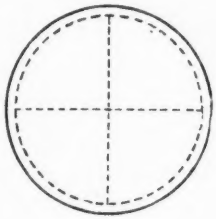
Like the men, most of the women wear calico; their dresses made in the simple fashion, of a loose jacket and short petticoats; but, differing from the men, each of them possesses the typical Navajo woman's costume, which she wears on all ceremonial occasions. The hair is dressed exactly the same as the men's, but no headgear is

ever worn. The ears of the women are pierced, but they never wear ornaments in them now, and this peculiarity is explained in a curious way by the men. They say that the infidelity of their women is notorious, and that formerly when married women wore ornaments in their ears, an injured husband punished an unfaithful wife by tearing them through the ear lobes. Now when a girl is married she takes the ornaments from her ears and wears them hanging from her necklace. Besides their necklaces, which are similar to those of the men, they also wear numerous silver bracelets, bangles, and finger rings. The typical dress is a heavy woolen tunic of dark blue, with wide designs in scarlet along the borders; it reaches just below the knee and is confined round the waist with a woven girdle. It consists merely of two pieces of the required size, sewed with yarn at the sides from the bottom hem to the waist, and the upper corners tied together at the shoulder, but the young women now generally wear a calico dress under this rough tunic. The moccasin is shaped just like the men's, but fastened to the back part of the upper is the half of a large buckskin, which is wrapped around the leg in regular folds from ankle to knee, and on the outside of the leg with a row of silver buttons. The women also wear a blanket as a mantle, but it is lighter, of brighter-colored wools, and more elaborate in design than those worn by the men. The women dress their children in miniature of the adult costumes.

Marriage Customs.—Polygamy is very general; a few men have four or five wives, quite a number have three, but two may be said to be the polygamous custom. It is difficult to estimate, but probably about a third of the male adults are polygamists. Girls are betrothed at a very early age, and some are married while yet mere children, but as a rule the marriageable age may be set from twelve to fourteen. The typical marriage between two young persons is arranged by their families, the elder brother of the bride's mother setting the value of the presents, which the bridegroom's people must give the bride's family, ranging from five to fifteen horses.

On the night set for the marriage both families and their friends meet at the hut of the bride's family. Here there are much feasting and singing, and the bride's family make return presents to the bridegroom's people, but not, of course, to the same amount. The women of the bride's family prepare cornmeal porridge, which is poured into a saucer-shaped basket. The bride's uncle then

sprinkles the sacred blue pollen of the larkspur upon the porridge, forming a design as in the accompanying figure. The bride has hitherto been lying beside her mother, concealed under a blanket, on the woman's side of the hut. After calling her to come to him, her uncle seats her on the west side of the hut, and the bridegroom sits down before her, with his face toward hers, and the basket of porridge set between them. A gourd of water is then given to the bride, who pours some of it on the bridegroom's hands while he washes them, and he then performs a like office for her. With the first two fingers of the right hand he then takes a pinch of the porridge, just where the line of pollen touches the circle of the east side. He eats this one pinch, and the bride dips with her fingers from the same place. He then takes in succession a pinch from the other places where the lines touch the circle and a final pinch from the center, the bride's fingers following his. The basket of porridge is then passed over to the younger guests, who speedily devour it with merry clamor, a custom analogous to dividing the bride's cake at a wedding. The elder relatives of the couple now give them much good and lengthy advice, and the marriage is complete. After this many songs, which are really prayers, are chanted and sung by all the men, and the lips of the women may be seen moving as they repeat these song-prayers, but they give no utterance to the words.



While these songs are in progress the newly-married couple contrive to steal away unobserved to a hut which the bridegroom has previously prepared.

Taboos.—A taboo now lies between the bride's mother and her son-in-law, and from the marriage night henceforth they must never look each other in the face again. Several other taboos are also rigidly observed; they must never touch fish, and nothing will induce them to taste one; their forests abound with wild turkey, but they are strictly forbidden to eat them; bears are quite numerous, but as they are also taboo they will not even touch a bearskin robe; nor must any one plant a tree; and the flesh of swine they abominate as if they were the devoutest of Hebrews. The wood of the hunting corral in which they trap the antelope is also tabooed.

They observe many curious ceremonies before and during a hunt, and all of the tree limbs forming the hunt corral are held as having been sacrificed to the hunting deities. Not only do they abhor food cooked on a fire of wood obtained from these enclosures, but they also keep at a distance from such a fire, dreading to feel its warmth or inhale its smoke.

There are also other social taboos. A man cannot marry a woman of his own clan, nor may brother and sister touch one another nor even receive anything directly from each others hands. Thus, if a sister wishes to give her brother an article, she places it on the ground and he picks it up. The origin of these singular customs is very obscure, and although for some of them very judicious reasons are assigned, yet they all rest upon vague and inadequate traditions. The most embarrassing of them all, however, is the tabooed mother-in-law, as it is the custom for the husband to live among his wife's people, and the commonest sounds in a Navajo camp are the friendly shouts, warning these marriage relatives apart.

Common Arts.—Weaving is entirely a woman's art with the Navajo, and they weave blankets and mantles, rugs and saddle-cloths of native wool and also of yarn bought from the trader; they are of endless variety in quality, texture, and design, and although it may be said they all bear a common resemblance, yet no two of them are exactly alike. The principal designs are emblematic, yet the weavers do not hold themselves closely bound to these conventions, but freely follow their own conceits as fancy leads them; each fabric thus holds an individuality of its own. They also weave their own dress material, girdles, garters, and hair-bands, these latter for tying up the cue at the back of the head. They also make their own dyes of vegetable matter, gums, and ochres in colors black, blue, red, and yellow. The older women still make cooking utensils of pottery, but the young women no longer practice the art. The iron camp-kettles and tin cups and coffee pots brought in by the trader are rapidly displacing the primitive gourd ladles and earthen jars. They also make saucer-shaped water-tight baskets and wicker water-bottles, coarse in texture but of elegant model.

Some of the men work in a rude way in iron and silver, fashioning bridal and personal ornaments; and all of them can dress

skins and make their own shoes and leggings, their own articles of dress, and horse trappings; but aside from these the men have no arts and, fortunately, they never acquired any knowledge of making an intoxicating liquor.

Mythology.—Their mythology is exceedingly complex and equally difficult to comprehend or to define. Their religious practices are mystic to obscurity, and within these limits it is almost hopeless to attempt treating this subject intelligibly.

Before the present world there were four others of which they have traditional story. The first under-world was far down in the "below," in the heart of the earth, and "First-man" and "First-woman," superhuman beings, always existed there. From pellicles of skin which they rubbed from different parts of their bodies they made eight other superhuman beings and animal monsters, and placed two at each of the cardinal points. Thus, at the east, Te'-hol-tso-di (a horned water monster) and E'-dit-ni (thunder); south, Tchalth (frog) and Te-hli'ng (horned horse), who was also a water monster; at the west, Ish'-een-es-tsun (salt woman) and Tho'-ne-ni-li (water sprinkler, a youth); north, Tûlth-k'le-ha-le (a swan-like monster) and Sis-tye'lth (tortoise). One man and one woman, the *first of the human family*, were also produced in the earliest under-world from pellicles of skin, as were also the first of animal kind, which, curiously enough, were locust, red ant, and horned toad.

These beings quarreled, and the water monsters caused a deluge. First-man made a raft of reeds, and by this they all floated to the roof, where Locust bored a hole through which they all ascended to the second world. Similar incidents, vague, weird, and inconsistent, occur in the succeeding worlds, a final flood compelling the ascent of the greatly increased human family to this present world. This they reached by entering a giant reed, which grew through the roof of the fourth world in a crevice opened by Badger, Rabbit, Bear, and all other animals that burrow in the ground or make lairs in the cliffs, all of which preceded the human family through this orifice. This place where they came up is called the Ha-d'ji-nai, and is said to be situated in southeastern Utah, but no Navajo has ever seen it. All mankind came up at the same time and place, and the gods distributed them over the face of the earth.

The popular deities now most generally appealed to are those in

the east, presiding over the dawn and the white light of day; in the west, to the deity who distributes the yellow light of sunset and who is also the hunter's patron. In the distant west, across the great water, is a very beneficent goddess called Es-ts'un n'ut-le-hi (woman metamorphic). Every evening she has grown old and feeble and every morning she resumes her state of maidenhood. The twin sons of this goddess, "The child of the waters" and "The slayer of alien gods," who frequent the six sacred mountains surrounding the Navajo land, are also important factors. The sun and the moon, the "Blackness of the above," which is regarded as the genius of fecundity, and the female spirit of the earth, and many other minor deities are all frequently petitioned. They hold no conception of a universal or controlling spirit, and their deities are not spiritual, but grossly material genii of localities, with limited attributes and functions.

The cardinal points have emblematic colors, and when enumerated it is always in the sequence: east (white), south (blue), west (yellow), north (black).

Religious Ceremonies.—The most important religious ceremonies are only celebrated during the winter, in the season when the snakes are asleep, as they have it; but aside from this limitation there are no specified times nor any regular succession of religious feasts. All their religious observances are either for the cure of disease or relief from sorcery, and their character and extent are determined by the patient and his people, who bear all the expense attending them. When a person falls ill or deems himself under a spell he and his friends decide upon which priest or shaman they shall summon. Each of these shamans, priests, or medicine-men, as they are indifferently designated in English, has his own particular songs and rites and his own scale of fees for attendance. If the patient is wealthy, he may decide to give the grand "mountain chant" * or "nine nights' song," and engage all the shamans of his region.

Upon the floor of the song or medicine lodge very elaborate sand mosaics are prepared, depicting mystic emblems, and groups of various deities, the details and costumes being very skillfully por-

*See W. Matthews' "Mountain Chant of the Navajos" in Ann. Rep. Bu. Ethnology for 1883-'84.

trayed in many-colored sands, charcoal, and ochres. During the ceremonies the patient is sprinkled with the colored pulp taken from the mosaic upon which he is seated, and at their conclusion it is entirely obliterated and the sands carried off and scattered. At night, while these observances are in progress, processions of masked and painted dancers, songs, and curious feats of magic take place in large bough enclosures, lit up with great bonfires, as all of their public ceremonies are held only after night-fall, between dark and daylight.

The deities are invoked not only to relieve the patient at whose instance the feast is given, but also any others present similarly afflicted. Rains and good grass for the flocks and bounteous favors to all the people are sung for, many of the episodes being vividly dramatic and impressive. These gatherings are also availed of for social intercourse, amusement, and mutual rejoicing.

Medicines.—They hold that all sickness is caused either by evil ghosts, sorcery, disregard of taboos, or neglect of fetich rites; hence the office of the shaman is really that of a priestly exorciser. In the proper sense of the term they have no medicine, although many herbs and other substances are used, but entirely without intelligence.

They bleed by incising with sharp fragments of obsidian, but metal must never be used. They practice administering medicines vicariously, as, for instance, to a well husband for a sick wife, but they firmly believe that more virtue attaches to the rattle and songs of the shaman than to any of the materials prescribed.

Their sweat-house is a miniature hogan, just large enough to cover a man when squatted on his heels. When used, hot stones are rolled into it, and the aperture is tightly closed with blankets. No water is thrown upon the stones, but the patient is filled with all he can drink, and on emerging he is, commonly, scoured dry with sand. It is really of great sanitary value, although probably more sick persons are killed than cured, through ignorance of its proper use.

Present Transitional Condition.—The Navajo cannot be classed with the ordinary "Agency Indians," as they are in no sense dependent upon the Government, but are entirely self-sustaining. More than twenty years ago, after a long period of hostility, they were subdued by troops, and an agency reëstablished which has been maintained ever since. At that time it is probable they would all have perished had it not been for the Government aid received. Now,

however, the great bulk of the tribe never go near the agency unless it be on the occasion of an issue of wagons or farm implements.

They are in a very interesting stage of transition, and clearly one of very material progress. The men have adopted modern tools and discarded the primitive appliances in all their common arts. The women still cling to the traditional methods in their special arts of spinning, weaving, basket-making, and pottery, but in the kitchen the ordinary utensils of civilization are forcing the crude pottery vessels into disuse. For the cumbrous wooden hoes and planting sticks modern implements have been substituted, thus enabling them to plant a greatly increased acreage. The proximity of trading posts, as has been mentioned, has radically transformed their original costumes and modified many of the early barbaric traits, and also affords them an excellent market for their wool, pottery, blankets, and other products.

Bright calico and Mexican straw hats are now their ordinary summer attire, and they take kindly to our comfortable heavy garments in cold weather. Firearms have almost entirely superseded the primitive weapons; silver ornaments of their own manufacture have displaced those of copper and brass; the glass beads of earlier days are now regarded with contempt, and valuable coral necklaces have become the fashion.

But perhaps the most promising indication of their steady advance toward civilization is diplayed in their growing desire to possess permanent dwellings, and many of them have already built for themselves comfortable two-roomed stone cabins. The steady growth of their wealth, in the constant increase of their flocks and herds, insures the continuance of this upward movement.

A judicious law might be made whereby they could legally hold their present grazing grounds, for in this arid region of scant vegetation a wider scope than elsewhere is necessary for pasturage, and, as most of their land lies at an altitude of over 6,000 feet, only a very small portion of it can ever be brought under cultivation. Were they thus guaranteed against interruption, judging from the rapid progress they have made during the last fifteen years, it is presumable that in a comparatively short time they will win their own way to a respectable social condition.

A-WA′-TO BI:

An Archeological Verification of a Tusayan Legend.*

BY J. WALTER FEWKES.

About the close of the year 1700 a large Tusayan pueblo called A-wa′-to-bi was tragically destroyed, so that since that time a ruin only marks its former site. Written history is silent in regard to the details of the event, but there still remains among the descendants of the actors in that destruction a legend of the deeds of that stirring time.† The present article is an attempt to demonstrate by archeological evidence the truth of that legend.

In the summer of 1892 I passed ten days in camp at the Tusayan ruin called by the Hopi, A-wa′-to-bi, "the place of the Bow People;" by the Navajos, Talla-hogan, the "Singing House." At that time, accompanied by Mr. A. M. Stephen, I made a reconnaissance and a few excavations in order to acquaint myself with the ruin, but I was particularly anxious to test the story of its destruction still repeated by the Hopi, and to gather from archeological researches whatever data could be found to shed light on the disaster which overthrew one of the most populous of the Tusayan pueblos about two hundred years ago. The following pages give some of the results of my cursory examinations.

The historical accounts of the destruction of A-wa′-to-bi, as seen by the following quotation from Bandelier, are very meager.‡ "The only document which I found," says this learned author, "in which detailed reference is made to the slaughter of Ahuatuyba is a *Parecer* of the clergy of New Mexico, bearing date 1722. In it the destruction of Ahuatuyba is explicitly stated. There existed at Santa Fé, in 1713, a collection of testimonies taken on the occurrence, and described as follows: '*Yten vn Quaderno de autos sobre la noiisia de lo suseddido en el puo de Aguatubi de la proa de Moqui autorisadas de Pedro de Morales en 63 fojas.*' It is mentioned in *Ymbentario de los*

*This work was done in the summer of 1892, while connected with the Hemenway Expedition.

†See Bourke: "Snake Dance of the Moquis of Arizona."

‡Part II, Final Report, Papers of the Archæological Institute, p. 372, 1892.

Papeles que se hallan en el Archibo del Cabildo justizia reximiento de esta villa de Santa Fé, 1713, MS." According to the same investigator, the Hopi destroyed A-wa'-to-bi about the end of the year 1700 or the beginning of 1701, but he was unable to tell the exact date, as nearly all the papers relating to the administration of Cubero have disappeared from the archives of Santa Fé, though enough remain to prove the probable accuracy of the Hopi version as presented by Bourke.

Let us first turn to the Indian legends of the destruction of A-wa'-to-bi as a supplement to the imperfect historical notices at present in print. The variants of this legend which have been published by Bourke and by Mindeleff are in the main very similar to the legend of the destruction of A-wa'-to-bi which I have heard in fragments from several Indians, both in Walpi and while camped on the site of the ruin. The following version, however, obtained for me from Sa'-li-ko* by Mr. A. M. Stephen, enters more into the details than any yet printed:

Destruction of A-wa'-to-bi as related by Sa'-li-ko (1).—Wi'-ki (2) and Si'-mo (3) and the other chiefs have told you their stories, and surely their ancestors were living here at Walpi when A-wa'-to-bi was occupied. It was a large village and many people lived there, and the village chief was called Ta-po'-lo, but he was not at peace with his people and there were quarreling and trouble. Owing to this conflict only a little rain fell, but the land was fertile and fair harvests were still gathered. The A-wa'-to-bi men were bad. Sometimes they went in small bands among the fields of the other villagers and cudgeled any solitary workers they found. If they overtook any woman they ravished her, and they waylaid hunting parties, taking the game, after beating and sometimes killing the hunters.

There was continued trouble in A-wa'-to-bi, and Ta-po'-lo sent to the Oraibi chief, asking him to bring his people and kill the evil A-wa'-to-bi.(4) The Oraibi came and fought with them, and many were killed on both sides, but the Oraibi were not strong enough to enter the village and were compelled to withdraw. On his way back the Oraibi chief stopped at Walpi and talked with the chiefs there. Said he: "I cannot tell why Ta-po'-lo wants the Oraibi to

*Sa'-li-ko belongs to the Pû-naû'-nyu-mû, one of the Cactus gentes of the Snake phratry of Walpi, and this is the story she tells as to how she became Ma-zrau'-mon-wi (chief of the Ma-zrau' Society), and how that hereditary office came into her family from an ancestor saved at the destruction of A-wa'-to-bi.

kill his folks, but we have tried and have not succeeded very well. Even if we did succeed, what benefit would come to us who live too far away to occupy the land? You Walpi people live close to them and have suffered most at their hands; it is for you to try." While they were talking Ta-po′-lo had also come, and it was then decided that the chiefs of all the villages should come together at Walpi to consult. Couriers were sent out, and when all the chiefs had arrived Ta-po′-lo declared that his people had become *po-wa′-ko* (sorcerers), and hence should all be destroyed.

It was then arranged that in four days large bands from all the other villages (5) should prepare themselves and assemble at a spring not far from A-wa′-to-bi.

A long while before this, when the Spaniards lived there, they had built a wall on the side of the village that needed protection, and in this wall was a great, strong door. Ta-po′-lo proposed that the assailants should come before dawn and he would be at this door ready to admit them, and under this compact he returned to his village. During the fourth night after this, as agreed upon, the various bands assembled at the deep-gulch spring,(6) and every man carried, besides his weapons, a *ko-pi′-tco-ko* (torch) and a bundle of greasewood. Just before dawn they moved silently up to the mesa summit, and, going directly to the east side of the village, they entered the gate,(7) which opened as they approached.

In one of the courts was a large kib-va, called Pü-vyüñ-o-bi,* and in it were a number of men engaged in po-wa′-ko rites (8). The assailants at once made for the kib-va, and, plucking up the ladder, they stood around the hatchway shooting arrows down among the entrapped occupants. In the numerous cooking-pits fire had been maintained through the night for the preparation of food in a feast upon this appointed morning, and there they lighted their torches. Great numbers of these and the bundles of greasewood being set on fire were then cast down the hatchway, and firewood from stacks upon the house terraces was also thrown into the kib-va. The red peppers (9), for which A-wa′-to-bi was famous, were hanging in thick clusters along the fronts of the houses, and these they crushed in their hands and flung upon the blazing fire in the kib-va to torture their burning occupants. After this, all who were capable of moving were compelled to travel or drag themselves till they came

*A term, according to Stephen, derived from the plural of po-wa′-ko.

to the sand-hills of Mi-coñ'-iñ-o-vi and there the final disposition of the prisoners was made.

My maternal ancestor had recognized the Ma-zrau'-moñ-wi and saved her at a place of massacre called Mas'-ki, and now he asked her whether she would be willing to initiate the women of Walpi in the rites of the Mam'-zrau. She complied, and thus the observance of the ceremonial called the Mam-zrau'-ti came to Walpi. I cannot tell how it came to the other villages. This Ma-zrau'-moñ-wi had no children, and hence my maternal ancestor's sister became chief and her badge of office or ti'-po-ni came to me. Some of the other A-wa'-to-bi women knew how to bring rain, and such of them as were willing to teach their songs were spared and went to different villages. The Oraibi chief saved a man who knew how to cause the peach to grow, and that is why Oraibi has such an abundance of peaches now. The Mi-coñ'-iñ-o-vi chief saved a prisoner who knew how to make the sweet so-wi'-wa (small-eared corn) grow, and this is why it is more abundant here than elsewhere. All the women who had song-prayers and were willing to teach them were spared and no children were designedly killed, but were divided among the villages, and most of them went to Mi-coñ'-iñ-o-vi (10). The remainder of the prisoners, men and women, were again tortured and dismembered and left to die on the sand-hills, and there their bones are, and the place is called Mas'-tco-mo (11). This is the story told by my old people.

NOTES.

1. Sa'-li-ko is Su'-pe-la's wife, who takes prominent parts in many ceremonials.

2. Wi'-ki, Chief of Antelopes, whose ti'-po-ni (palladium, "mother," of fraternity) he holds.

3. Si'-mo (*obiit*, 1892), Chief of the Flutes. The published stories of the destruction were obtained from several sources, but as it adds an element of exactitude to repeat the story of one person, that of Sa'-li-ko is here given. Of course, in repeating the story, since human memory is fallible, errors must be expected, and the personal equation should always be considered. These folk-tales are not mathematically exact, although capable of scientific treatment, and versions vary. For two centuries the story of A-wa'-to-bi has been repeated, and there is little doubt that modifications have been introduced in successive generations.

4. The different causes assigned in the Ho-pi legends for the destruction of A-wa'-to-bi correspond in a general way. Constant quarrels and

bickerings between the pueblos led to repeated controversies, while misunderstandings about boundaries of fields, ownership in springs, and similar disagreements brought on wars which destroyed villages. Sorcery, a dread and deadly cause of murder and destruction, was a most potent factor and, from the legend, would seem to be a primal cause of the overthrow of A-wa′-to-bi. The imaginary or real neglect of these Bow-people * to observe rain ceremonials and the charge that they kept the needed rain from their neighbors by sorcery would be considered offenses worthy of death. Then, too, possibly the ill-fated pueblo had received the Spaniards back, after the great rebellion, more cordially than they should have done, according to the judgment of their neighbors. That in itself, especially if their priests made many converts, as we have reason to think they did from the numbers baptized after the reconquest, might have been a *causa belli*. It is said in several variants of the legend that A-wa′-to-bi was full of "singing men," but I have found none which distinctly states that the acceptance of Christianity was a cause of the destruction, although it seems to me that this may have been the true reason. In considering the causes of the overthrow it is interesting to know something of the kinship of the A-wa′-to-bi people, and we find that some, at least, of the phratries of the fated pueblo were the same as those in the villages of their conquerors. It is, however, a well-established fact that family ties between different pueblos do not imply friendly feeling. According to Mindeleff's account, compiled from Stephen's notes, a part of the Sun people from the east settled at A-wa′-to-bi. The same author speaks of refugees from Si ka′-ki (now a ruin in the foot-hills to the right of the main road to Hano or "Te-wa") who also went to A-wa′-to-bi and transmitted their feudal wrongs to their descendants. The wrongs of Si-ka′-ki against the Walpi were no less than the destruction of their town, portion of the ground-plans of which are still pointed out. It is also said in Mindeleff's account that the Badger people were found in A-wa′-to-bi, and that the Mag-pie and Field-mouse and portions of the Asa people lived there. There is little doubt but that many peoples were represented in old A-wa′-to-bi, but as our knowledge of their kinship depends upon hearsay and is incapable of demonstration, definite statements must be accepted with more or less reserve. According to Se-ge′-ni, a Navajo who has his house nearest A-wa′-to-bi, the A-wa′-ta (Bow), Ho-nan′-i (Bear), Pieb (Tobacco), and Bu-li′-nya-mû (Butterfly) were the gentes which inhabited A-wa′-to-bi. Of these the A-wa′-ta or Bow were the strongest, and they gave the name A-wa′-to-bi to the place. The pictograph of a bow and arrow on the side of the mesa below A-wa′-to-bi may have been made with reference to the former inhabitants, but I much doubt its contemporaneity with the stirring events of the destruction. In one of the excavated chambers I found an arrow-sharpener upon which was cut a bow and arrow and zigzag figures, the import of which I am ignorant.

* *A-wa′-ta*, bow; *o′-bi*, place of.

5. It is almost universally conceded by the Hopi and western Tewa that A-wa′-tọ-bi was destroyed before the second delegation of the latter came to the east mesa and settled Ha′-no-ki. The first migrators from the Rio Grande region, known as that of the Asa people, were relatives of the Tewa, but were amalgamated with the Hopi and lost their original language.* The ancestors of the present inhabitants of Ha-no, it is affirmed, took no part in the destruction, for they had not then come to the country. Although A-wa′-to-bi has been shunned since its overthrow as po-wa′-ko (wizard) and the story of its tragedy repeated from generation to generation, the ancient shrines of the place were used until a few years ago and portions of the old cult† have been transplanted to the homes of their victors.

It is stated in Mindeleff's account that the attack was made by the men of Walpi, and as a populous neighboring pueblo this town, no doubt, took a prominent part; but there is good reason to believe that the other villages (except Ha-no), especially Mi-coñ′-iñ-o-vi, participated. It is not probable that there was a strong band of union between the other pueblos against A-wa′-to-bi, for the history of these communities indicates little concert of action. The belief that the people of A-wa′-to-bi were sorcerers might have united them, but ordinarily each pueblo was a feudal power in itself and settled its own difficulties.

Judging from the stacks of charred and half-burnt corn on the ear which I found when excavating the ruins, one can hardly suppose that plunder was an object, nor do any of the stories hint at this as a cause. The Walpi people had many grievances against these neighbors, due to the bad character of some of them, and To-po′-la may have used their superstitions to serve his own designs.

6. The spring where the hostiles assembled was indicated to us by Sege′-ni, a Navajo who lived near it and who had married a Hopi woman. This spring is possibly the one by which Vargas camped after the baptism of the children of A-wa′-to-bi, in 1692. There is good water nearer A-wa′-to-bi, and a fine spring west of the ruin and south of the burial sand-hills was developed for us while in camp. I agree with Mindeleff (page 50) that the walls of a corral near the spring do not prove that the A-wa′-to-bi people had sheep at the time of its destruction, because the corral appears to me more modern than any of the walls of A-wa′-to-bi, and yet it is probable that the Spaniards had imported sheep into the country at this early date.

7. The gateway lies at the extreme west end of the ruins and is indicated by two stone structures still standing. In its mode of construc-

* According to Stephen. See Mindeleff's "A Study of Pueblo Architecture," in 8th Ann. Rep. Bur. Ethnology.

† See reference to A-lo′-sa-ka, *Journ. Am. Eth. and Arch.*, vol. ii, and description of Mam-zrau′-ti, *Amer. Anthrop.*, July, 1892.

tion and general appearance this gateway resembles the Mission walls. Neither wooden beams nor remnants of a door are visible.*

8. In one account it is said the tragic event occurred in the Na-ac′-nai-ya, which is now celebrated in November. This corresponds with the meager historical data which we have. The cooking-pits are filled and the fires lighted, as a general thing, near the close of the ceremonials. The ceremony of Na-ac′-nai-ya is that of the "New Fire," but the connection of the destruction with any definite festival is very vague.

9. Every one concurs in the statement that red peppers were used. The plain at the foot of the A-wa′-to-bi mesa was reputed to be one of the gardens of Tusayan.

10. Many things support this statement. The Al-o′-sa-ka figurines were especially claimed by the Mi-coñ′-iñ-o-vi people, as I have recorded in the *Journal of American Ethnology and Archæology*, volume ii, No. i. Families from this village still claim A-wa′-to-bi lands, basing their claim on their relationship to former inhabitants of the pueblo.

11. Mas-tco′-mo is pointed out by the present Hopi, but I have not excavated it to try to find the bones of the unfortunates. The names Mas′-ki (Death House) and Mas-tco′-mo (Death Mound), however, are significant. In some variants of the legend gruesome tales of the cruelties to which the women were submitted at Mas′-ki are told. Most horrible mutilations were made of the persons of those wretched ones who would not go with the captors, and, if the stories are correct, the final butchery at Mas-tco′-mo must have been horrible. The one bright spot in this somber tragedy is that the children were not killed, and that such women as knew the rain songs and prayers were saved. Although it is stated that all of the men were put to death, it is probable that To-po′-la had a following who, it can hardly be supposed, met the fate of those opposed to him, and it would seem incredible that some did not escape in the confusion.

The present trail up the south side of the mesa leads past the southeastern corner of the standing walls of the Mission and crosses the plaza, leaving it near the gateway, as indicated on the map (Pl. I). The ancient entrance to the plaza was probably the same as that now used, and there are indications of a more primitive trail a few yards to the east, alternating foot-holes and hand-rests by which one grasps the side of the cliff as he ascends. These bear unmistakable evidences of use, and can be traced several feet up the almost precipitous sides of the rock. The ruins of high walls on

* This gateway was probably built about the time of the Mission; indeed, the appearance of the ruin of A-wa′-to-bi would seem to indicate that its southern and eastern sides are more recent than the western section and show traces of Spanish influence.

either side of the gap by which one enters the plaza by these trails indicate the former existence of defensive works similar to those found at the west end of Walpi at the present day. The approaches to A-wa'-to-bi from the north and east sides are open and level, with sand dunes, convenient for concealment, not far away. It is probable that the hostiles approached the doomed pueblo from these sides rather than by way of the precipitous trail on the south. Their rendezvous at the spring was conveniently situated behind the sand-hills, and they would naturally wish to avoid the risk of discovery in following the more public trail of the mesa.

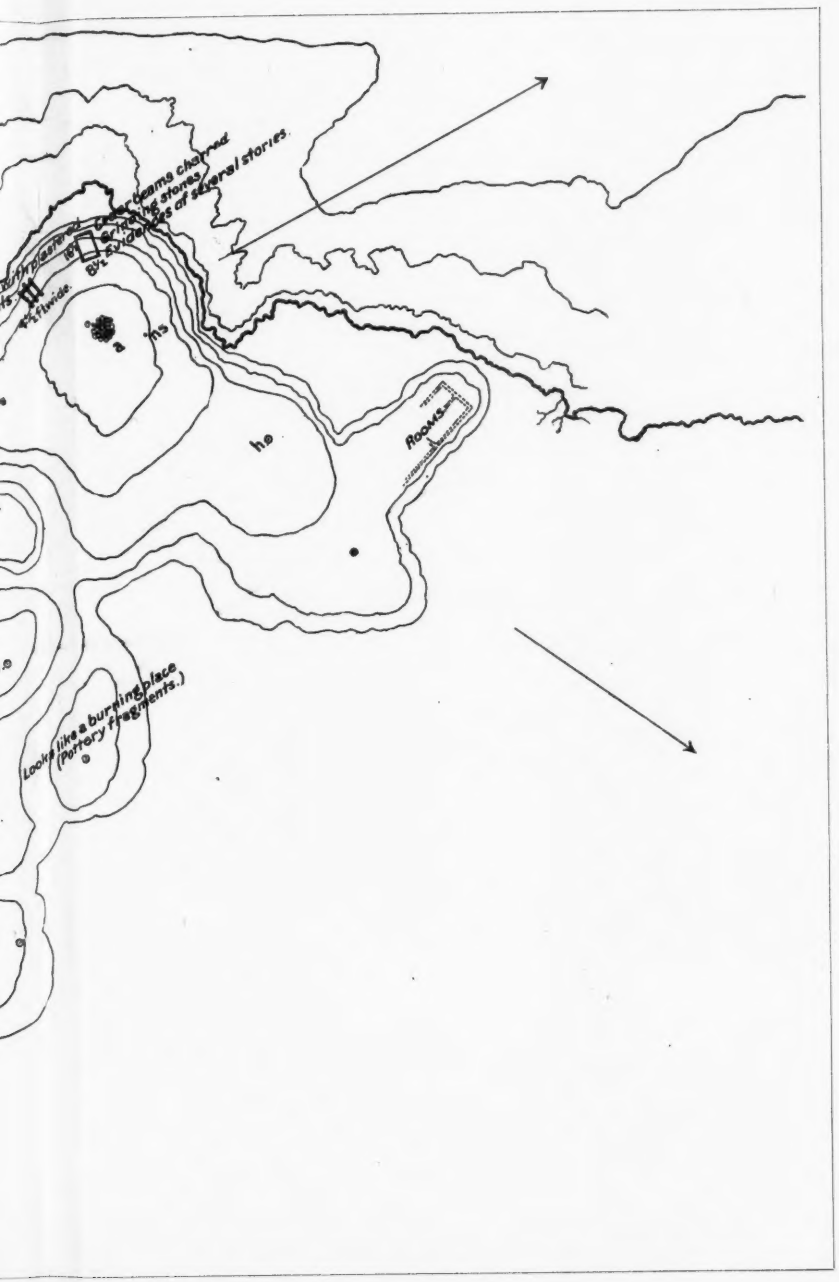
Let us now turn to the evidences of the truth of the legend which can be found by an examination of the ruin. The position and general facts of A-wa'-to-bi are mentioned by Bourke, Mindeleff, and Bandelier, but no excavations of the ruin had been made or published up to the time of my visit. The first published identification of A-wa'-to-bi was by Bourke, although it had been recognized by Stephen and Keam before that time. Mindeleff in 1893 (report dated 1891) published an account of the ruin, with map, charts of ground-plan of the eastern part, and valuable views of the walls of the Mission. So far as the author knows, this account is the most complete yet published, but it is confined more especially to the so-called Mission and the chambers near it.*

The mounds which indicate the site of A-wa'-to-bi cover an area about rectangular in shape, the length being about double the breadth. Their greatest extension is not far from east and west along the southern edge of a high mesa. When the walls stood upright those on the western part probably rose almost continuous with the cliffs.

The ruin is naturally divided into an eastern and western part, of which the western seems to be the older. The eastern is better preserved and is almost wholly taken up by the so-called Mission. This portion, with the adjacent ground-plans of rooms, has been described by Mindeleff, to whose account I take the liberty of referring. When seen from the east, the walls of the Mission are prominent objects above ground and seem to lie on the south side of the eastern portion, while on the north side of the same there is a range of high mounds which extends continuously half way along

* In this article I shall not attempt a description of the ruin, as my object is simply to call attention to the facts obtained, in order to verify the Hopi legend.

PLATE I.—Map of ruin



ap of ruin of A-wa′-to-bi.

the northern border and indicates from its altitude that the rooms at this part were of more than a single story.

In almost every room which was excavated evidences of fire or a great conflagration were brought to light. In some instances the beams had fallen in and were simply charred superficially; in others they were thoroughly reduced to charcoal, but we rarely opened a room without finding the beams and burnt fragments of wood on the floor. The inner walls of many of the rooms were covered with plaster adobe, and the floors were generally paved with flat stones. The mealing troughs or stone slabs where corn was ground were ordinarily in place, and cooking pots and vessels of both coiled and smooth ware were repeatedly found in the rooms of both the eastern and western sections of the ruin.*

The accompanying map (Pl. I) will, it is hoped, give the relative positions of the different rooms excavated, but a brief mention of some of the interesting points about each may have a value.

Room (*b. s.*) *with bear's skeleton.*—The chamber in which the bear's skeleton was found was eight feet long; six feet on one side and seven feet four inches on the opposite. The short walls were oriented N. 32° W. The bones were found at the west end of the room. The presence of the bear's skeleton might have been due to the fact that at the time of the overthrow a carcass of this animal was awaiting consumption.

Narrow room (*n. s.*) *west of initial point.*—This chamber was inclosed on four sides by walls and measured two feet nine inches by twelve feet six inches. It was at first mistaken for a passage-way, but there was no door connecting it with any other room. Fragments of walls that may have fallen from chambers overhead filled its interior.

Room (*w. s.*) *with window looking south.*—This room lies north of the adobe wall of the Mission and measures ten feet by six feet. The window measures one foot nine inches.

Storage-room (*c.*) *with charred corn.*—A square room northwest of the po-wa′-ko kib-va had one side filled with charred corn, stacked similarly to the way corn is at present stored in Walpi and Zuñi. So perfectly was this corn preserved that many ears were gathered on which the kernels were easily distinguished, and bushels of charred fragments were taken out. This goes to show that the place was not

*Fragments of pottery are very common on the mounds of A-wa′-to-bi, which is perhaps accounted for by the distance from inhabited pueblos.

rifled in the general conflagration. A food-bowl and a very much corroded iron implement were taken from this room. The finding of an iron implement is interesting as showing that at the time of the destruction metallic implements were known to the A-wa'-to-bi people, having no doubt been brought there by the Spaniards. The weapons which were found in abundance were the stone hatchets and arrow-heads so common in the southwest, the latter occurring in surface finds on the ruins. The position in which the corroded knife-blade was found among the corn, leaves no doubt but that it was there at the time of the destruction of the pueblo. The presence of a conglomerate of cinders and small stones in the burnt chambers would seem to indicate the fierceness of the heat during the conflagration. Large quantities of this substance were taken from the chambers in the high range of rooms to the north of the plaza in the western part of the town.

Room (p. h.) with paint and hair strings.—In one of the small rooms which I opened there were several fragments of red pigment, and in a niche in the wall I found a string made of human hair similar to those now used by the Hopi maidens in tying their hair in the peculiar whorls worn by them until they marry. The Indians at work for me were confident that this was the purpose for which the cord was made.

Po-wa-ko kib-va.—As the fact that the men were in the kib-va at the time of the destruction and that many were killed there is repeatedly mentioned in the legend, I was anxious to identify this room. In this search I had very meager data to direct me, the only mention of the kib-va being a very general one by Mindeleff, which gave no account of its position. An isolated ground-plan of a subterranean chamber was noticed in the middle of the plaza to the north of the Mission. Various things led me to suspect that this was a kib-va, but I have only circumstantial evidence to prove such identification. The Indians employed in the excavation called this room a kib-va. This chamber was examined from surface to floor, laying bare the wall and floor on the south side, my trench extending, several feet in width, from corner to corner. From the middle of this trench, extending to the center of the kib-va, I caused another trench to be dug down to the floor, which, as far as my exploration went, was covered with flat stones.

The first trench showed that the south side is fourteen feet from one wall to another; the east side is twenty-eight feet six inches,

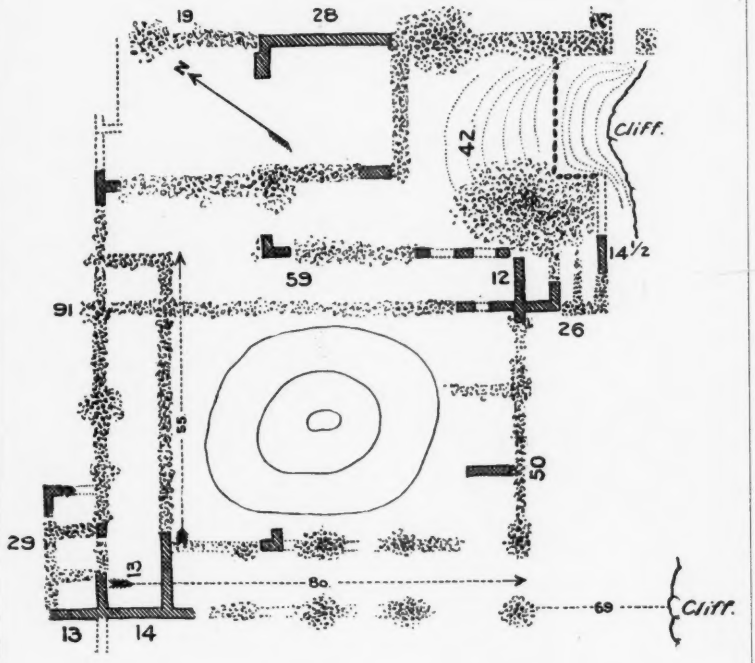


PLATE II.—Ground plan of A-wa'-to-bi.

the west twenty-four feet six inches, and the north side, which is irregular and oblique, eighteen feet. The orientation is N. 40° W.* The floor averages five feet below the surface of the ground.

In these excavations charred wood, ashes, and other evidences of fire were found. The most important discoveries made in this room were a human skull and other bones, which were found four feet six inches below the surface in the middle of the chamber, directly under the place where the old sky-hole formerly opened, through which the relentless Hopi may have thrown down the burning fagots and chile upon their helpless victims. After the Indians had found these bones, which *en passant* it must be said they would not touch with their hands, one of their number, whose father-in-law is In′-ti-wa, the ka-tci′-na moñ′-wi, returned to Walpi that night. The next day a curious custom was carried out, by the advice of In′-ti-wa. Several na-kwa′-ko-ci, strings with feathers attached, were deposited in the trenches as propitiatory offerings to Ma′-sau-wuh, the Death God of whom I have elsewhere spoken. Observing the anxiety of the Hopi workmen, I abandoned excavations in the po-wa′-ko kib-va from policy, for I did not wish the report to be circulated among their people that I desired to find the skeletons of the wizards, as it might prejudice them against me. The number of bones of human beings thus far taken from this excavation is too small to answer the requirements of the legend, but the mass of earth still filling this chamber is great enough to cover many more. New excavations alone can shed light on this question.

I believe that I have excavated the po-wa′-ko or sorcerer's kib-va, and tradition supports this identification. Still I have not proven that to be the case, although the discovery of human bones supports the legend. It seems pretty true that a tragedy took place in this kib-va, for there is no evidence that the bodies were buried there, but whether this chamber is the original po-wa′-ko kib-va or not will always be in doubt.†

The Mission.—The walls standing above ground belong to the Mission and mark the most recent portion of the pueblo. In addition to the standing walls, there are others which undoubtedly belong to the period of the Spanish occupation, and still others of adobe

* For the orientation of the Walpi estufas see my article on Tusayan ceremonials, *Jour. of Amer. Eth. and Arch.*, vol. ii, No. 1. It is interesting to find that the orientation of this chamber corresponds so closely with that of the kib-va of Walpi.

† The Indian workmen called this chamber a sorcerer's kib-va, and its relative position adds weight to the acceptance of the above identification, but I am not sure that the Indians regarded it as an estufa before my excavations.

which may have been added after the destruction of A-wa'-to-bi. The accompanying chart of the ground plan (Pl. II) gives all the data necessary to know the size and altitude of the standing walls. No attempt was made to excavate within the inclosure of the Mission. Mindeleff, in his description of A-wa'-to-bi, gives a fair account of the Mission, and my map of the ground plan supplements his measurements. The differences in our plans may be due to changes since he made his survey—falling of walls, drifting of sand, and other causes.

Old shrines near A-wa'-to-bi.—Of the several shrines in the vicinity of A-wa'-to-bi there is one near the outline ruin to the west of the main pueblo, not far from the sand-hill burial place. This shrine faces to the east and is a rude pile of stones, in which is a piece of petrified wood and two water-worn bowlders, called the "Old Chiefs." It is not peculiar in any respect and no offerings were found near it. A figure of this shrine is given in plate III, figure 1. At the extreme west end of the A-wa'-to-bi mesa is a simple shrine composed of eight bowlders, with a reddish-colored stone, "Chief," within it. This shrine is figured in plate III, figure 2. A shrine which has evidences of recent as well as ancient use lies under a huge bowlder at the base of the extreme west end of the mesa, among the foot-hills. This shrine is more complicated than those mentioned above, and the stones which compose it are nicely joined together. The crescent of this shrine opens toward the south. It has been used in recent times by the Mi-coñ'-iñ-o-vi people, but many of the bung-shaped, squash and melon, ba'-ho(s) which cover the ground bear evidence of considerable age (Pl. III, figure 3).

The entrance to the shrine of the A-lo'-sa-ka faces south, and is situated about fifty feet below the old ruin at the most precipitous point of the mesa. It is a shallow chamber eroded in the side of a large bowlder, in front of the entrance to which stands a roughly laid stone wall only a few feet high (Pl. III, figure 4). A flat stone formerly closed it, and sticks of wood, now irregularly placed, show that it was once more of a structure. The floor was covered with soil and there were offerings of ba'-ho(s) in the shrine when I visited it. This is the shrine out of which the A-lo'-sa-ka were taken, but they were afterward returned to the Mi-coñ'-iñ-o-vi people, as I have elsewhere mentioned.* Rough sketches of the A-lo'-sa-ka were

**Jour. of Amer. Eth. and Arch.*, vol. ii, No. 1.

PLATE III. Old shrine from S.W. [illegible]

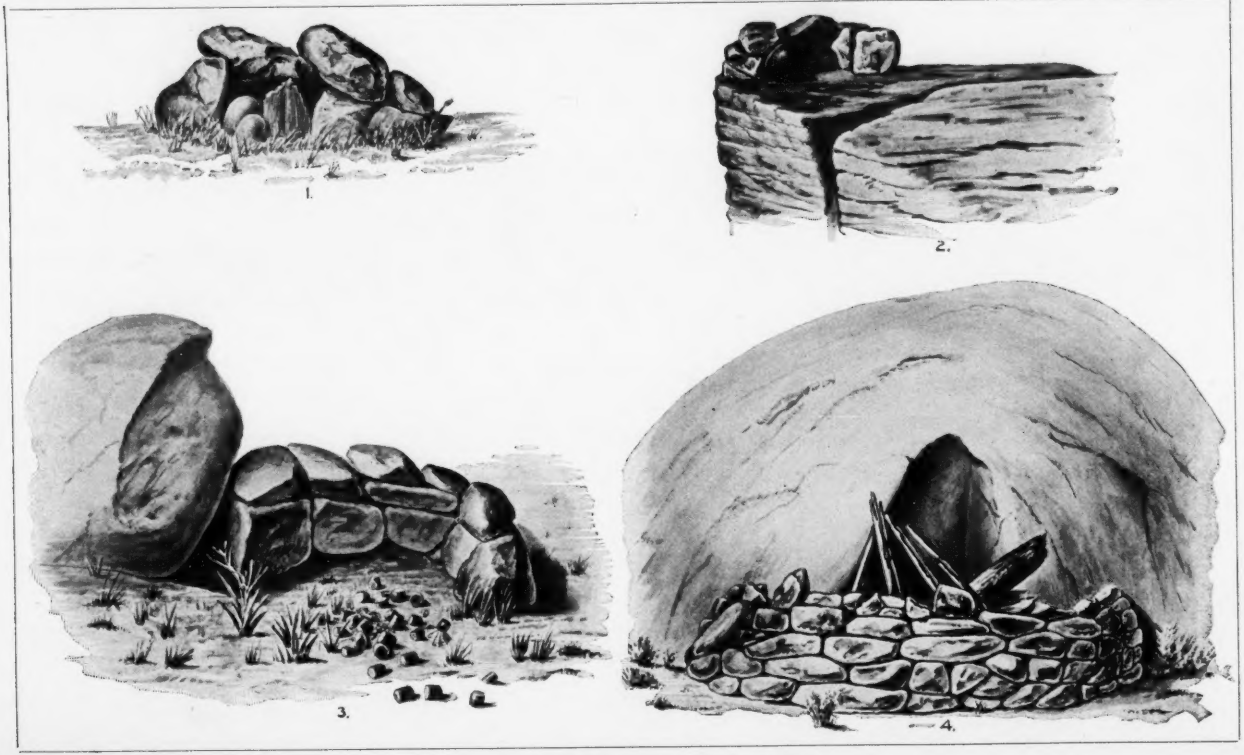


PLATE III.—Old shrines near A-wa'-to-bi.

made when they were taken from the shrine, but the images themselves have not been seen since they were restored to the Indians.

Cemetery of A-wa′-to-bi.—The sand-dunes somewhat back from the mesa and to the west of the ruin of A-wa′-to-bi served as an aboriginal burial place in former times, and from it has been taken some of the best pottery found in Tusayan. These sand-hills are sparsely covered with stunted bushes, and their contour is continually changing on account of the drifting sand. Every sand-storm alters the surface, bringing into view the skeletons of the dead and fragments of food-vessels, some of which are covered with most interesting symbolic decorations. It was not always the habit of the A-wa′-to-bi people to "kill" these food-vessels on the interment of the dead, as many unbroken bowls have been found there. The dead were buried in a sitting posture, the knees drawn up to the breast.*

Explanation of Plates.

Plate I.—Map of ruin of A-wa′-to-bi. This map was plotted by Mr. A. M. Stephen during our visit to the ruin. The heavy black line indicates the edge of the mesa; the lighter lines the contours.

a. Highest point of the western portion of the ruin.
b. s. Site of the room in which the bear's skeleton was found.
c. Rooms with stacks of burnt corn.
e. Northeastern corner of ridge of rooms of the eastern division.
h. Site of northwestern corner of main ruin.
n. s. Narrow room.
p. Po-wa′-ko kib-va.
p. h. Room with fragments of pigment and niche with hair strings.
w. s. Room with southern window.

The figures indicate the size of rooms excavated. Ground plans of buried chambers are to be found in all the higher mounds, but the more important are indicated by special lettering.

Plate II.—Ground plan of the standing walls of the Mission, with measurements and altitudes.

Plate III.—Old shrines near A-wa′-to-bi.

1. Shrine near the burial sand-hills.
2. Shrine at the extreme west end of the mesa.
3. Shrine with offerings, situated among the foot-hills at the extreme west end of mesa.
4. Shrine of the A-lo′-sa-ka.

*The Walpi people now bury their dead in the foot-hills to the south of the mesa. Food-vessels, with food, a planting-stick, and a twig, with feathers, are placed above the grave.

JAPANESE MINOR RELIGIOUS PRACTICES.—Of miscellaneous minor religious practices, the name is legion. Such are the sprig of holly stuck to a door-post to keep out evil spirits, the imprint of a hand over the door or entrance to a house, and similarly the rude picture of a horse pasted up over the house doors to avert smallpox. What may be the *rationale* of this I know not, but Mr. Aston, in a private communication, suggests that the horse may be intended to hint to the evil spirit that the family is abroad. Another curious practice is that of depositing on some mountain-top the instrument with which a crime has been committed. Till within a few years ago Nantai-zan, a high summit in the Nikkō district, now that happy hunting ground of "globe-trotters," was littered with swords that had thus been offered to the mountain god. Or, leaving the land for the sea, how touching is the sailor's habit of scattering grains of rice on the waves as an offering to Kompira or some other deity with power to still the billows.—*B. H. Chamberlain in Jour. Anthrop. Inst., vol. xxii, London, 1893, p. 358.*

HOW INDIAN SONGS ARE BORROWED.—Indian songs, I have discovered, travel far, and those of one tribe are soon at home in another. There seems to have been quite an extended acquaintance between tribes, the Rocky mountains proving no serious barrier. Customs and songs borrowed from the Crow Indians have obtained for a century at least among the Nez Percé. Dakota songs are also found there with an equally remote introduction. The Omahas took from the Sioux the Ma-wa-da-ne songs, and from the Otoe the Hae-ka-ne. The Dakotas appropriated the Omaha Hae-thu-ska songs, as did the Winnebagos. I have had Omahas sing me the songs of many different tribes, but they were always credited to the tribe to which they belonged. I have never met an instance of plagiarism among the Indians. Certain kinds of songs can be purchased by individuals, and the song becomes personal property, but the purchaser would never claim to have composed it.—*Alice C. Fletcher, "Omaha Indian Music," in Peabody Museum Papers, vol. i, 1893, No. 5.*

PIÑON GATHERING AMONG THE PANAMINT INDIANS.

BY B. H. DUTCHER.*

While on a trip into Death valley, Inyo county, California, in the latter part of the summer of 1891, I had the good fortune to spend two nights and one day in a camp of Panamint Indians, who were engaged in obtaining their annual supply of "piñons."

In company with John Hughes, the Indian mail-carrier to the Death Valley signal station, another buck and a young squaw, I left Keeler, on Owens lake, September 18, and started eastward across the summits of the Inyo range toward Cottonwood cañon, in the Panamint mountains. Our first day's journey carried us to the eastern extremity of a high mountain ridge, extending east and west from the Inyo to the Panamint mountains, and separating Saline valley on the north from Panamint valley on the south. The crest or plateau top of this ridge was more or less rocky and broken and covered at its eastern end by a large grove of piñon trees (*Pinus monophylla*), among which the camp was situated.

As this camp was but temporary and established only for shelter while the nutting was in progress, a brief description of it may not be out of place. In the shadow of a small group of piñon trees a number of small circles or "corrals" had been built. Perhaps there were some five or six of these in all, each seeming to accommodate one family or that fraction of a family that was present in the camp. In diameter they measured eight or ten feet, and their walls consisted merely of the broken piñon branches and of the small bushes that grew around, piled up into a loose row two or three feet thick and about as many high. The circle was broken or imperfect where entrance or exit was needed, and where two of these circles became tangent a passage was generally made from one to the other. Their uses seemed to be few—to secure a little privacy for the occupants; to serve as a slight wind-break during the night, when the family slept inside, and during the day to serve as a rack in holding out of the dirt the blankets, extra clothes, cooking uten-

*Of the Death Valley Expedition of 1891.

sils, and other paraphernalia of the household. In the center of each circle was a small area where the fire was kindled, around which all gathered for a short time during the chill of the early morning and in the evening before retiring. The floor was smooth, clear of stones and weeds, and carpeted by a thick layer of fine, gray dust.

The food supply, with the exception of the nuts, was scanty, consisting of a little tea and sugar, flour, salt, and the refuse from the Keeler slaughter-pen. A can of corn had been purchased, and was opened, as a great luxury.

Their clothing, with the exception of hats and moccasins, was of civilized manufacture, consisting exclusively of sacks and skirts of greasy muslin or calico. One young squaw was engaged with thread and needle in fashioning one of these garments from some fresh print calico, apparently with some skill. Most of the women wore heavy skin moccasins, in which the soles were sewed to the uppers; the men invariably had shoes. For hats all the older squaws had small conical baskets, under which the hair was piled on top of the head.

Shortly after daylight all hands, one after another, rolled slowly out of their scanty blankets and gathered around the feeble flames that the more energetic had succeeded in starting. Crouching down on their haunches, they endeavored to drive the chill from their bones by presenting first one side to the blaze, then the other, and to remove the sleep from their eyes by vigorous rubbing. Before sunrise a meager breakfast had been eaten, and they began the work of the day, the women betaking themselves to the nutting, the men to further sleep, tobacco, or cards. In fact, with the exception of acting as rather disinterested spectators at times and of eating the piñons on all possible occasions, the men took no part in the industry. My guide at one time during the morning attempted to shoot some of the quail that abounded in the neighborhood, but failed.

Immediately after the meal several of the women equipped themselves with large, conical pack-baskets and beating sticks and sallied forth to gather the cones from the trees in the vicinity. The baskets were made of light wicker-work, shaped like the frustum of a right cone, about two to two and one-half feet high and nearly as broad. The upper base of the frustum, or the bottom of the basket, was flat, and from three to five inches in diameter. A leather thong

was fastened into the side just below the rim, passed around the forehead, and similarly inserted into the wicker-work on the other side of the head, thus serving to bind the basket to the carrier. The beating or pulling sticks were straight rods, about an inch in diameter and five or six feet long, stripped of bark and with all the branches removed, save one at the outer extremity, which was cut off about six inches from its union with the main staff. The stick itself terminated immediately beyond this point. To prevent this spur or limb from being split off by the rough usage to which it was subjected a stout thong was wrapped around from one branch to the other about three or four inches from the vertex of the angle. To give a clearer idea of this instrument, it may be compared to an A, in which the uprights stand for the limbs, one being greatly prolonged, and the cross-bar for the binding thong.

Thus equipped with basket and stick, a squaw would advance to some untouched tree and proceed to beat and pick the cones from the limbs until her receptacle was full, when she would return to camp, empty the load onto the ground, and start off again to refill the basket or remain to open cones, as necessity dictated. Those not engaged thus in keeping up the supply of fresh cones busied themselves in removing the nuts.

The cones of *Pinus monophylla* are small, perhaps three inches long by two in diameter, with strong, thick scales, under each of which are found two, rarely one, of the small seeds called "piñons" or pine nuts. Being quite tough when fresh and having moreover an abundant supply of sticky pitch, they are rather difficult to open, unless subjected to a drying treatment. To this end a dense pile of brush is prepared, six or eight feet across and two feet high, and caused to burn slowly or rather to smoulder, the density and close packing of the mass preventing any strong or rapid combustion. On top of this heap and through it the fresh cones are mixed and left until the heat has dried the pitch and caused the cone leaves to open out to an angle of perhaps 45° or 50° and expose the nuts beneath. When a sufficient number of the cones had been dried and opened and the mass had cooled the women would seat themselves in a circle around the heap, each with a shallow, shell-shaped basket, a small stick, and two stones, and proceed to work. One of these stones was flat, of the size of a small plate, and was laid on the ground as an anvil; the other, about the size of the fist, was used as a hammer. Having raked out a few of the dried cones with

her stick, she would grasp one in her left hand and, holding it with its base on the anvil and its apex upward, would strike it from one to three sharp blows with the hammer; then, dropping the hammer, she would grasp the cone in both hands, hold it over the basket-saucer, and by a slight twisting motion, moving the hands in opposite directions, accompanied by a shaking up and down, dislodge the already loosened nuts from under the opened leaves.

This operation almost invariably resulted in the removal of all the nuts; but to guard against loss each cone was examined immediately after the shaking, and if any remained they were picked out by the fingers. The empty cones were tossed aside into a heap.

So completely do they remove the kernels by these operations that though I carefully searched many of the discarded cones not a single nut did I find in any of them.

This labor occupied the greater part of the day of my sojourn in the camp, all the ten or a dozen women taking active part, save one young squaw, who was nursing a week-old child. Toward noon, a party arriving with a supply of watermelons from Cottonwood cañon, in the Panamint mountains, all hands ceased work and proceeded to refresh themselves, after which the labor was again resumed. During the entire day no one seemed to exert herself to any great extent, all keeping steadily employed in rather a leisurely manner.

The nuts thus secured were of course mixed with more or less "chaff" or cone leaves, which had to be removed before the product was used or packed away. To accomplish this, toward evening, when enough had been secured to make the operation pay, a squaw would spread out on a smooth patch of ground a blanket or piece of cotton cloth, and, placing a number of nuts in a broad, open dish or saucer of wicker-work, would hold it over the cloth and, tossing the nuts up and down, let the wind fan out the lighter leaves and dirt. After being thus cleaned, the kernels were laid aside and eventually packed into gunny-sacks to be stored or marketed.

The quantity of nuts secured from this single day's packing I should roughly judge to be about one or two bushels, though the number of small lots constituting the whole rendered accurate estimate impossible. The nuts seemed to be very plentiful indeed. I saw several filled grain-sacks that had been set aside, and a number of broad wicker dishes were always kept replenished for immediate use.

POLYSYNTHESIS IN THE LANGUAGES OF THE AMERICAN INDIANS.

BY J. N. B. HEWITT.

In the early part of this century Peter S. Duponceau announced his conviction, obtained from a cursory study of the scanty and imperfect linguistic material accessible to him, that the grammatic phenomena of the known tongues of the American Indians are characterized by a common ground plan, or, adopting a phrase of Maupertuis, a "plan of ideas." This plan he called *polysynthetic* or *syntactic*, and defined it as follows:

"A polysynthetic or syntactic construction of language is that in which the greatest number of ideas are comprised in the least number of words. This is done principally in two ways. 1. By a mode of compounding locutions which is not confined to joining two words together, as in Greek, or varying the inflection or termination of a radical word, as in most European languages, but by interweaving together the most significant sounds or syllables of each simple word, so as to form a compound that will awaken in the mind at once all the ideas singly expressed by the words from which they are taken. 2. By an analogous combination [of] the various parts of speech, particularly by means of the verb, so that its various forms and inflections will express not only the principal action, but the greatest possible number of the moral ideas and physical objects connected with it, and will combine itself to the greatest extent with those conceptions which are the subject of other parts of speech, and in other languages require to be expressed by separate and distinct words. Such I take to be the general character of the Indian languages." *

He elsewhere says:

"I am inclined to believe that these forms are peculiar to this part of the world, and that they do not exist in the languages of the old world." †

In an essay, which won, in 1833, the Volney prize of the Institute of France, he says:

"À l'aide d'inflexions, comme dans les langues grecque et latine, de particules, affixes et suffixes, comme dans le copte, l'hébreu et les langues dites sémitiques, de la jonction de particules significatives, comme

* Transactions of the Historical and Literary Committee of the American Philosophical Society, held at Philadelphia, for promoting useful knowledge, vol. i, p. xxx.

† Loc. cit., p. 370.

dans le chinois, et enfin de syllabes et souvent de simples lettres intercalées à l'effet de réveiller une idée de l'expression de laquelle cette lettre fait partie, à quoi il faut ajouter l'ellipse, qui fait sousentendre, les Indiens de l'Amérique sont parvenus à former des langues qui comprennent le plus grand nombre d'idées dans le plus petit nombre de mots possible. Au moyen de ces procédés ils peuvent changer la nature de toutes les parties du discours; du verbe, faire un adverbe ou un nom; de l'adjective ou du substantif, un verbe; enfin, tous les auteurs qui ont écrit sur ces langues avec connaissance de cause, depuis le nord jusqu'au sud, affirment que, dans ces idiomes sauvages, on peut former des mots à l'infini." *

If a general principle of the kind here described could be established it would be of the utmost importance to the students of comparative grammar. This, however, can be done only by a careful and thorough analysis by the modern methods of linguistics of every language concerned, an analysis which has not yet been made. For such an analysis trustworthy and sufficient data must also be at hand.

The lexic and syntactic material relating to these languages is, in some instances, quite extensive, consisting mostly of short vocabularies, translations of the Holy Scriptures or portions thereof, and more or less pretentious lexicons and grammars; but, for the purpose of comparative or other study, these are so faulty and misleading and so warped by erroneous theories and misapprehensions that they are of small value and of precarious utility in morphologic study. The learned Father Cuoq, equally well-versed in Iroquoian and Algonquian speech, says:

"Que penser de certaines traductions des Stes. Écritures? Ceux qui ont tant soit peu étudié les différentes portions de la Bible traduites dans les langues indiennes de l'Amérique par les soins de certaines *Sociétés Bibliques*, en trouvent la traduction—il m'est pénible de le dire—vraiment pitoyable. Ce n'est rien moins qu'une profanation de la parole de Dieu; et je suis assuré pour ma part que les membres eux-mêmes de ces sociétés seraient les premiers à répudier leurs pauvres publications et à les condamner aux flammes, s'ils connaissaient les incorrections, les inexactitudes, les solécismes, les barbarismes, et les contre-sens dont elles fourmillent." †

Duponceau had no ready means of testing the work of his chief authorities, and so was compelled to accept their unsupported state-

* Mémoire sur le système grammatical des langues de quelques nations indiennes de l'Amérique du nord. Paris, 1838, p. 89.

† "Jugement erroné de M. Ernest Renan sur les langues sauvages," p. 105.

ments and deductions. He drew his information of the Iroquoian language from the works of Zeisberger and Pyrlaeus, chiefly those of the former. A careful and unbiased examination of Zeisberger's work shows that the worthy missionary had at best only a superficial and precarious knowledge of that language, for he lacked the very elementary acquaintance with it which would have enabled him invariably to distinguish its words from their derivatives and from its sentences and phrases.

The method of inflections, which is common to European and other tongues, need not detain us; the method of intercalation or interweaving vocal elements claimed to be peculiarly characteristic of the polysynthetic scheme demands some consideration. Had it a substantial basis of fact it would indeed serve to mark off from all others those languages in which it was found to prevail. The use of a process so singular and abnormal in its operation can be established only by the evidence of unequivocal facts. The data adduced as proof that such a method of combining vocal elements is one of the most characteristic traits of all known Indian tongues are of the most questionable character. This process is not a part of Iroquoian grammar, nor has a satisfactory example of it been cited from Algonquian speech, and Rev. J. Owen Dorsey states that it does not find a place in the Siouan grammatic processes; hence it follows that the languages of these three great stocks are not polysynthetic within the meaning of this term as used by Duponceau, because they do not use the so-called "artificial elements" nor the alleged process of "interweaving together" or "intercalation" of vocables, which alone constitute the characteristic traits of the supposed "polysynthetic construction." This raises the presumption that careful study will show that other less-known Indian tongues, which, like the three named above, have been classed as polysynthetic by Duponceau and his disciples, are not founded on that theoretic plan; because wherever the syntactic and morphologic processes have been ascertained from accurate and sufficient data they have been found at variance with the polysynthetic processes, and they likewise differ greatly among themselves in their ground plans. It has, in fact, been found that those Indian languages whose lexic and syntactic phenomena have been thoroughly analyzed have not, as Duponceau maintained, a peculiar construction of language, in which "the greatest number of ideas are comprised in the least number of words," which is the motive or object of his conjectured ground plan or "plan of ideas."

Duponceau further says:

"Les Indiens, surtout ceux qui sont chasseurs et nomades, n'ont pus une tête bien analytique. Ils se sont bientôt embrouillés dans la formation de leurs mots: recevant leurs idées en groupes, ainsi que la nature nous les présente, ils ont voulu les exprimer à la fois avec toutes leurs parties, telles qu'ils les apercevaient.* Ont-ils voulu, par exemple, donner un nom à un certain arbre, ils n'ont pas pensé à le désigner simplement par le fruit, ou par quelque autre apparence unique; mais ils ont dit: *l'arbre portant tel fruit et dont les feuilles ressemblent à telle chose*, et ils ont cherché à exprimer tout cela par un seul mot. Mais comment faire? S'ils joignaient tous ces mots ensemble, ils en auraient un nouveau d'une longueur énorme; et puis, leur nouvelle langue, abondant en consonnes, n'etait pas heureusement formée pour une pareille jonction. Alors ils ont pris quelque chose de chaque mot, et par la réunion et l'intercalation des syllables, et même de sons simples tirés de la phrase qu'ils avaient choisie, ou plutôt des mots incohérens qui la présentaient à leur esprit, ils ont formé un nom propre composé de ces différentes parties d'idées; et pour celles qu'ils n'ont pu y faire entrer, l'ellipse est venue à leur sécours. * * * Ce qui nous paraît le plus probable, est que les langues, comme le monde, ont commencé par le chaos, et ont acquis de la régularité plus tôt ou plus tard, sous une forme ou une autre, selon le génie des peuples, leurs situations ou leurs besoins. Celles des Indiens de l'Amérique du nord ont retenu beaucoup de ce genre chaotique qui a dû présider à leur formation. Les parties du discours y sont entremêlées d'une manière qui fait croire qu'elles n'ont pas toujours été soumises aux règles qui les gouvernent actuellement et qui, introduites peu à peu, n'ont pu que modifier, sans le détruire, le système de formation des mots qui paraît avoir prevalu dès le commencement.

"Ce système polysynthétique est ce qui caractérise les langues algonquines, ainsi que toutes celles de l'Amérique, et influe nécessairement sur leurs formes grammaticales, qui ne diffèrent que dans les détails."

To this he adds the following foot-note:

"La plus forte preuve qu'on puisse donner du mélange d'idées qui a existé au temps de la formation de ces langues, est le nombre de mots qu'elles ont pour exprimer la même chose, selon les circonstances qui l'accompagnent. Il y a un verbe pour dire 'j'ai envie de manger de la viande,' et un autre pour 'j'ai envie de manger de la soupe ou de la bouillie;' un mot, pour une plaie faite avec un instrument tranchant; un autre, pour une plaie faîte avec un instrument contondant; ces langues généralisent rarement." †

In support of these striking statements Duponceau has produced no trustworthy proofs. He has adduced only the most fanciful

*This is in substance the doctrine of holophrasis, to which attention will be given hereafter.

†Mémoire, pp. 118–120.

reasons to support his conviction that the Indian languages still preserve the "chaotic style" which "seems to have prevailed from the beginning." The intermixture of the parts of speech does not follow from the fact that a language can in a word-sentence say, "I desire meat," or "I desire soup," and can distinguish between a "cut" and a "bruise." Such word-sentences are governed by certain fixed laws of position and sequence of stems.

The usual method of obtaining a vocabulary from an unlettered people is largely responsible for the doctrine that Indians rarely generalize. A savage is asked, How do you say "I eat meat," or "I drink soup?" and, if he understands the question, he replies by the appropriate sentences (not words, as many think), meaning, in his own vernacular, "I eat meat," or "I drink soup." He can distinguish between a *cut* and a *bruise*, and shows it by his language, but must it be inferred from this that he cannot generalize, or that he does it but rarely?

The materials of the language of the Iroquois consist of notional words, namely, nouns, verbs, and adjectives; representative words, namely, prefixive and independent pronouns; relational words, adverbs, conjunctions, and suffixive prepositions; and derivative elements, namely, formatives and flexions.

The distinctive nature and characteristic functions of these elements cannot be changed at will by any speaker, for the good and sufficient reason that a language does and can do only what it is in the habit of doing. In the category of notional words, the class of elements called noun-stems may not indifferently assume the functions and the flexions peculiar to either the verb-stems or the adjective-stems, neither can the verb-stems nor the adjective-stems indifferently assume the functions and the flexions peculiar to either of the other two classes of elements in that category; hence Duponceau's sweeping statement concerning the general character of the American Indian languages, that "they can change the nature of all parts of speech; of the verb, make an adverb or a noun; of the adjective or substantive, a verb," is not true of the Iroquoian tongue. The elements of its lexicon have acquired their individual values by virtue of a series of historical changes, and they severally retain these values solely at the behest of conventional usage, being subject at all times to further mutations of form and signification as this usage may decree.

The stems of words and word-sentences are not divided for any

purpose whatever. The compound stems of word-sentences may, by historical changes, become parts of speech—notional terms—denotive of the things described by the word-sentences from which they are derived, and they can be so considered only when the linguistic sense has come to disregard the separate meanings of the elements thus combined. This is *parasynthesis*.* A prolific source of much error concerning the nature of the grammatic processes prevailing in this language is the fact that these word-sentences are mistaken for words, for a word-sentence must, it is repeated, undergo certain historical changes of form and function before it becomes a word—a part of speech. Conventional usage alone is the arbiter in this, as it is in all things linguistic.

To exemplify this the following concise analysis of the stems of a verb and a noun is given. The verb-stem selected is *-hĕⁿs-yĕⁿ*, from the word-sentence *ru-hĕⁿs'-yĕⁿ*, "he hears, understands (by hearing)," and the noun stem is *-thĕtc-hră-kwĕ*, from *ut-hĕtc-hră'-kwĕ*, "a chair, seat." These two stems have been chosen solely for the reason that their constitutive elements have not yet undergone that degree of effacement which would render them quite irrecognizable to any but an accomplished master of the language.

The full and original form of *ut-hĕtc-hră'-kwĕ* was *ut-hĕtc-hĭ-hră'-kwĕ*, which was evidently derived from the word-sentence *yĕⁿt-hĕtc-hĭ-hră'-khwă'*, "one (some one) uses it to support his buttocks," in which the pronominal element is *yĕⁿt-* (which is the reflexive form of *-yă-*, "one or she"), meaning "one-his" or "she-her," the reflexive performing a possessive and not a reflexive office; the noun-stem is *-hĕtc-hĭ*, from *u-hĕtc'-hĕ*, "buttocks, fundament," and, lastly, the verb *-hqră-khwă'*, "to support with," "to use for supporting," or "to use to support." This verb-stem is from the word-sentence *ra-hqră'-khwă'*, "he uses it for supporting (it)" or "he supports it with (it)," in which the "it" enclosed in parenthesis is understood. These two notional stems, *-hĕtc-hĕ* (fundament) and *-hqră-khwă'* (to support with, use to support), then form the compound stem of the word, *ut-hĕtc-hqră'-kwĕ*, "chair, stool;" but both stems themselves may be still further reduced to show the original ideas which combined to form them. The verb-stem chosen is *-hĕⁿ-syĕⁿ*, from the simple sentence *ru-hĕⁿ'-syĕⁿ*, "he hears it," or simply, "he hears, understands (by hearing)." The com-

* The formation and derivation of a word from a compound.

ponents of this stem are *-hĕⁿs-* and *-yĕⁿ*; *-hĕⁿs-* is the stem of the archaic *u-hĕⁿ'-sĕ*, "the ear," and *-yĕⁿ* is the verb "to enter" of the sentence *ra'-yĕⁿ*, "he enters." Hence, "to hear" is made up of the ideas "to enter-ear," but before these two notions could be rendered by "hear" usage had to disregard their several and separate meanings. Moreover, the stem *-hqră-khwă'*, meaning as a morphologic unit, "to support with," "to use for supporting," or "to use to support," is in its more literal meaning itself the result of the forgetting of the etymologic elements of a compound. It is made up of the stems *-hĕqr*, from *ra'-hĕqr*, "he puts (it) upon," and the auxiliary *-khwă'*, "to do, make," hence, "to use," the object of the auxiliary being always "it" understood, its object being of course indicated by the context.

The pronominal elements prefixed to the stems of words and word-sentences perform one of two offices: first, they may be prefixed to noun-stems for the purpose of indicating gender or possession; and, second, they may name determinatively the things of which it is required that notional stems be made names or predicates.

In Iroquoian speech all the developments of the language expressed by the terms word-sentence, stem-formation, and inflection, are based primarily on the well-known principle of juxtaposition and a more or less intimate fusion of elements, but the living and traditional usage of the language has established the following morphothetic* canons, which determine the nature and the relative position or sequence of elements that may be combined into words, phrases, and word-sentences, namely:

First. The simple or compound stem of a notional word or of a word-sentence may not be employed isolatedly without a prefixed simple or complex personal pronoun or a gender sign or flexion.

Second. Only two notional stems may be combined in the same word-sentence, and they must not be of the same part of speech.

Third. The stem of a verb or adjective may be combined with the stem of a noun, and the stem of the verb or adjective must be placed *after* and never *before* the noun-stem.

Fourth. An adjective-stem may not be combined with a verb-stem, but it may unite with the formative auxiliary *-thă'*, *to cause* or *make*, and with the inchoative *-ç*.

* From morphothesis, the principle or law fixing not only the sequence but also determining the kind and number of elements which may be embodied in a word-sentence, and also the morphology thus established.

Fifth. A qualificative or other word or element may not be interposed between the two combined stems of notional words, nor between the simple or compound notional stem and its simple or complex pronominal prefix, derivative and formative change being effected only by prefixing or suffixing suitable flexions and formatives to the forms fixed by the foregoing canons.

The following formulas, with examples, chiefly from the Mohawk and Onondaga dialects, will show the application of the preceding canons in the building of words and word-sentences:

Simple Words.

(I.) Pronoun + verb-stem.

In the following examples the pronominal element is separated from the stem by a hyphen.

ka′-riks, it bites (it);	ka′-kĕⁿ, it sees (it);
yo′-riks, it bites it;	yo′-kĕⁿ, it sees it;
ye′-riks, she bites (it);	ye′-kĕⁿ, she sees (it);
ra′-riks, he bites (it);	shako′-kĕⁿ, he sees them;
shako′-ryos, he kills them;	ra′-yă'ks, he breaks, cuts it.

The final "s" in some of the examples is the sign of customary action and not a part of the verb-stem.

(II.) Pronoun + noun-stem.

In these examples the hyphen divides the pronominal element from the notional stem.

o-noⁿ′să', or	o-koⁿ′să', or
ka-noⁿ′să', a house; house;	ka-koⁿ′să', a face or mask;
o-roⁿ′hyă', or	o-roñ′tă', or
ka-roⁿ′hyă', sky, the sky;	ka-roñ′tă', a tree or log;
o-qsĭ′′tă', a foot, the foot;	o-hne′kă', water; liquid.

(III.) Pronoun + adjective-stem.

In these examples the hyphen separates the pronominal element from the stem.

ka-hoñ′′tci, it is black;	ka-no′roⁿ', it is costly, dear; scarce; deplorable;
wa-katc′te', it is durable, lasting;	(w)a′-se', it is new; green;
iw′-es, it is long;	(w)a-ka′yoñ', it is old, ancient;
w-i′yo, it is fine, beautiful;	(y)o-ya′ne', it is good; proper.

Compound Notional Stems.

(IV.) Pronoun + noun-stem + verb-stem.

In the following examples the pronominal, nominal, and verbal elements are separated one from another by hyphens.

ra-roñt′-yā′ks, he cuts, breaks, the tree or log;
ra-hy-ûskwās, he plucks fruit;
ka-hĕq′na-nĕⁿs′kwās, it poaches on the field;
ye-′wāhrī′-saks, she seeks meat; is looking for meat;
ra-noⁿs′-ĕñtī, he is building a house;
ye-the′tcr-oñnīs, she makes flour;
wă-skwi′-yă′ks, it crosses the bridge;
ye-noⁿkwă′tcra-yĕñteri, she understands medicine.

(V.) Pronoun + noun-stem + adjective-stem.

The hyphen is used in the following examples as it has been in those under preceding formulas, to separate the elements of the compound or word-sentence.

wa-hya′-ksĕñ, (it) fruit is bad;
ka-nĕⁿsa′-kwāst, (it) house is good;
yu-hĕq nă-kwāst, its crop (field) is good;
ka-noⁿs′-iyo, (it) house is large;
wa-hya-hĕⁿs′tci, (it) fruit is black;
yo-qsă′-hni-roⁿ, its foot is firm;
yu-qsă′-ksĕñ, its foot is bad.

The pronoun *it* enclosed by parentheses is a gender sign only or is understood. Being definitive, it may often be rendered by "*the.*"

These morphothetic rules establish and govern the morphology or ground-plan of Iroquoian words and word-sentences, and any violation of these rules by a speaker in forming combinations of vocal elements necessarily produces a meaningless assemblage of articulate sounds. For instance, to combine two nouns, two verbs, or two adjectives in the same compound would not constitute the one noun, verb, or adjective a predicate or qualifier of the other member of the combination.

In speaking of what he is pleased to call the original structure of the American Indian tongues and of the numerous novel forms with which he claims they abound, Duponceau says:

"It is impossible to resist the impression which forces itself upon us, that we are among the aboriginal inhabitants of a *New World.* We find

a *new* manner of compounding words from various roots, so as to strike the mind at once with a whole mass of ideas; a *new* manner of expressing the cases of substantives, by inflecting the verbs which govern them; a *new* number (the particular plural) applied to the declension of nouns and conjugation of verbs; a *new* concordance in tense of the conjunction with the verb. We see not only pronouns, as in the Hebrew and some other languages, but adjectives, conjunctions, and adverbs combined with the principal part of speech and producing an immense variety of verbal forms." *

This alleged *new* manner of compounding words, the so-called polysynthetic scheme, has already been shown to be erroneous and unfounded in fact, since the morphologic processes of those Indian languages which have been critically analyzed do not correspond or accord with the theoretical processes distinctive of the scheme, nor do the morphologic processes prevailing in one tongue accord with those common to another in so marked a degree as to warrant the inference that they are based on a common principle or ground-plan differing essentially from fundamental principles common to languages of the old hemisphere. Concerning the *new* manner of expressing the cases of nouns by inflecting the verbs which govern them, it may be said that it is not true of the Iroquoian tongue; besides, such a process would imply that there exists a provision for what is still undeveloped and non-existent in many of the Indian languages—a nominal case-ending; the fact being, in most instances, that the noun is in apposition with an objective pronoun forming an integral part of the person-endings of the verb; by this means the relation of the noun to the action of the verb is indicated. In other instances the position of a noun in a word-sentence determines its "case;" in others it is determined by the pronoun with which it is in apposition. In regard to a *new* number, the particular plural, it will suffice to say that it is both Asiatic and European, and to that extent not a distinctive trait of the American Indian languages. It is thus evident that this array of new methods and novel means is the product of misapprehension and insufficient investigation. Duponceau's fundamental error lay in the fact that he attempted to classify all known Indian tongues under a hypothetical system based chiefly on a superficial study of Algonquian morphologies, before he had made a thorough investigation of the morphologies of the other Indian tongues involved. His whole

* Transactions, p. xxxviii.

conception of language was erroneous. For instance, speaking of Indian speech, he says:

"L'organisation intérieure du mot est à la discrétion de l'inventeur. S'il a des règles à suivre, ce sont des règles de goût et non de grammaire. Presqu' entièrement, c'est l'oreille qui en décide; les changemens et transpositions de syllabes et de sons restent à sa disposition, comme les inversions des mots de la langue latine sont à celle de l'homme qui parle ou écrit dans cet idiome." *

No critical linguistic student could consistently hold such views of language and its processes. This statement, besides, is scarcely in accord with what he had previously remarked in his Report, where he says:

"Nor can this class of languages be divested, even in imagination, of the admirable order, method and regularity, which pervade them; for it is evident that without these, such complicated forms of language could not subsist, and the confusion which would follow would render them unfit even for the communication of the most simple ideas. A simple language may be, perhaps, unmethodical; but one which is highly complicated, and in which the parts of speech are to a considerable degree interwoven with each other, I humbly conceive, never can." †

The former of these assertions, making the interior form of a word the plaything of the caprice of every speaker's whim and fancy, represents his opinion after more than ten years' study of the languages, and the latter after not more than three, showing that the longer he studied, the less clearly did he comprehend them. Many students have adopted the term *polysynthetic* as a designation of the Indian languages, but, apparently, without taking the precaution to learn the exact sense in which Duponceau himself employed it, or to ascertain whether such a scheme of classification was warranted by the grammatic facts of these languages. In explanation of his use of it he says that the Indian languages belong to "the class which I have denominated *polysynthetic* merely for the sake of designation and without meaning to affix any other importance to the name." ‡

It thus appears that he employed the term without direct reference to its etymologic meaning and merely as a tag or label for a theoretic scheme of classification, which he believed epitomized the

* Mémoire, p. 145.
† Op. cit., p. xxvii.
‡ Op. cit., p. xxxvi.

fundamental principles of morphology underlying the structures of the American Indian languages. It should be discarded, since its further use only perpetuates his errors.

In an essay, entitled "Polysynthesis and Incorporation as Characteristics of American Languages," Dr. D. G Brinton attempts to show that F. Müller, L. Adam, and others fail to comprehend what he himself believes to be Duponceau's conception of a "polysynthetic construction of language." He says:

"I believe that for the scientific study of language, and especially of American languages, it will be profitable to restore and clearly to differentiate the distinction between polysynthesis and incorporation, dimly perceived by Duponceau and expressed by him in the words already quoted. With these may be retained the neologism of Lieber, *holophrasis*, and the three defined as follows:

"*Polysynthesis* is a method of word-building, applicable either to nominals or verbals, which not only employs juxtaposition with aphæresis, syncope, apocope, etc., but also words, forms of words and significant phonetic elements which have no separate existence apart from such compounds. This latter peculiarity marks it off altogether from the processes of agglutination and collocation.

"*Incorporation* (*Einverleibung*) is a structural process confined to verbals, by which the nominal or pronominal elements of the proposition are subordinated to the verbal elements, either in form or position; in the former case having no independent existence in the language in the form required by the verb, and in the latter case being included within the specific verbal signs of tense and mood. In a fully incorporative language the verbal exhausts the syntax of the grammar, all other parts of speech remaining in isolation and without structural connection.

"*Holophrasis* does not refer to structural peculiarities of language, but to the psychological impulse which lies at the root of polysynthesis and incorporation. It is the same in both instances—the effort to express the whole proposition in one word. This in turn is instigated by the stronger stimulus which the imagination receives from an idea conveyed in one word rather than in many." * * *

"As the holophrastic method makes no provision for the syntax of the sentence outside of the expression of action (*i. e.*, the verbal and what it embraces), nouns and adjectives are not declined. The 'cases' which appear in many grammars of American languages, are usually indications of space or direction, or of possession, and not case-endings in the sense of Aryan grammar.

"A further consequence of the same method is the absence of true relative pronouns, of copulative conjunctions, and generally of the machinery of dependent clauses."

All this doubtless has a certain plausibility so long as it is tested solely by the faulty and equivocal works of the pioneers in American Indian philology; but, by the light of the facts of language which are gradually being made available, these polysynthetic dogmas are being dissipated.

Dr. Brinton's definition of polysynthesis is clearly defective and incomplete. There is an omission of the name or names of the elements subject to "juxtaposition," and also of the term co-ordinate with "juxtaposition" and expressive of a *process* contrary or co-relative to that of "juxtaposition," two very important omissions in a definition designed to "clearly differentiate the distinction between polysynthesis and incorporation, *dimly* perceived by Duponceau." But, as Dr. Brinton was merely recasting and remoulding the first section of Duponceau's definition of a polysynthetic construction of language, the omitted process, judging from this fact and from other parts of Dr. Brinton's essay, is that affirmed by Duponceau to consist in the "intercalation" or "interweaving together the most significant sounds or syllables of each simple word" and the various "parts of speech, particularly by means of the verb." The alleged process of intercalation or interweaving together of vocal elements has already been shown to be mere hypothesis and unfounded in the known facts of Indian languages. Moreover, Dr. Brinton tells us that agglutination and collocation differ from polysynthesis in not using "words, forms of words and significant phonetic elements which have no separate existence apart from such compounds." If this statement were substantiated by facts, it would pass unchallenged; but it is to be doubted that "agglutination and collocation" do not employ, in the polysynthetic sense, "words, forms of words," which have no existence outside of compound forms. Even in the English, which is agglutinative in some of its forms, such nouns as *sooth* and *wise* are practically obsolete in current speech, although in use in compound forms; hence, must it be inferred that they never had an independent existence in the language? Not at all. In the obsolescence of words and forms they will maintain an existence in certain quaint or striking phrases or compounds when they have lost their adaptability for current and new formations.

It may be stated that "significant phonetic elements" form no part of the linguistic material of Indian languages any more than they do of that of the Indo-European languages. Words and sounds

in Indian as in other languages have no intrinsic signification apart from that imposed on them by the common usage of the community.

The apparent abbreviation of nouns in derivative words and word-sentences which has given rise to some of these misleading designations may be explained by the fact that those who attempted to define the methods of derivation and combination of vocal elements took noun-stems from prepositional and other phrases or from word-sentences wherein those students have perchance found the stem for which they sought, overlooking the fact that language does not make decomposition an antecedent condition to other composition. Again, in some languages the gender-sign is usually discarded from the noun-stem when the stem is united with another to form a new compound.

From Dr. Brinton's definition of incorporation—the process of intercalation or interweaving together of Duponceau—it follows that where no conscious or artificial mutilation of notional stems takes place in the compound there is no subordination, and so to that extent no incorporation; that where no modal or tensal flexions are affixed to the word-sentence in such manner as to give the pronominal and nominal elements—the person-endings and the noun-stems—the appearance of being infixed or enclosed between those elements and the verb stem, there is likewise no incorporation. These changes are not made in the simple tenses of the Iroquoian indicative mode, showing that the combination of the notional stems is a condition antecedent to the affixion of modal and tensal flexions to the word-sentence. The fatal error of this doctrine of incorporation lies in the fact that it places flexions and formatives on an equality with notional stems in the expression of thought, making flexions and formatives an integral part of the semasiologic difference between two expressions or word-sentences composed of unlike notional stems, for it is not the flexions but the notional stems which, from the standpoint of morphology, give to every word-sentence its semasiologic individuality. So that testing the question by Dr. Brinton's definition of what constitutes incorporation as he conceives it was dimly perceived by Duponceau, there is in the ground-forms of Iroquoian words and word-sentences no trace of incorporation; for it is not a question of the affixion or suffixion of elements to a root or stem, but merely the use of a system for that purpose.

The statement that the word-sentence exhausts the syntax of the language in which the principle of incorporation prevails, that "no provisions for the syntax of the sentence outside of the expression of action (*i. e.*, the verbal and what it embraces)" are made, is unwarranted so far as the Iroquoian, Siouan, Athapascan, and Algonquian languages are concerned. The employment by these languages of correlatives, relative and coördinate pronouns and conjunctions, and prepositional phrases is ample refutation of such claim. Facts like these show on what an unsubstantial basis was erected the hypothetical polysynthetic scheme of Duponceau and his followers.

Dr. Brinton affirms that incorporation consists in subordinating the nominal and pronominal elements of the proposition to the verbal in one of two ways: first, by a mutilation of form, and, second, by position. In the first case the noun or pronoun must assume a form which it does not have apart from such compounds, and in the second it must be placed between the signs of mode and tense on the one hand and the verb-stem on the other. In Sanscrit, an Indo-European language, the person-endings which are admittedly pronominal in origin do not have the form of the pronouns when apart from the compounds to which they are affixed. Moreover, they may be inserted between the verb and its adverbial qualifiers in the proposition.

In section 249 of his Sanscrit Grammar Prof. Max Müller says:

"The comparative is formed by *tara* or *iyas;* the superlative by *tama* or *ishtha*. These terminations, *tara* and *tama*, are not restricted in Sanscrit to adjectives. Substantives, such as *nri*, man, form *nritamah*, a thorough man; *stri*, woman, *stritara*, more of a woman. Even after case-terminations or personal-terminations *tara* and *tama* may be used; thus from *purvahne*, in the forenoon; *purvahnetare*, earlier in the forenoon (Pan., vi, 3, 17); from *pachati*, he cooks; *pachatitaram*, he cooks better (Pan., v, 3, 57); *pachatitamam*, he cooks best (Pan., v, 3, 56)."

Here the pronominal elements, the person-terminations, and even the case-endings are inserted (to use the language of polysynthesis) between the notional stem and its adjectival and adverbial adjuncts. This is within the purview of Dr. Brinton's definition of incorporation, the subordination of the pronominal elements both in form and in position surpassed by nothing from American languages. Is, therefore, the Sanscrit based on a model common to the aboriginal American tongues? If modern instances of this

"incorporation" and the synthetic capacity for compounding words be necessary, let us turn to the abundantly synthetic structure of modern Russian, which exemplifies the important fact that in the Indo-European family, of which the Russian is a member, the tendency has not been "everywhere and in all respects downward, toward poverty of synthetic forms, throughout the historic period." Of the structure of this language Prof. W. D. Whitney says:

"The Russian of the present day possesses in some respects a capacity of synthetic development hardly, if at all, excelled by that of any ancient tongue. For example, it takes the two independent words *bez Boga*, 'without God,' and fuses them into a theme from which it draws a whole list of derivatives. Thus, first, by adding an adjective suffix, it gets the adjective *bezbozhnŭĭ*, 'godless;' a new suffix appended to this makes a noun, *bezbozhnik*, 'a godless person, an atheist;' the noun gives birth to a denominative verb, *bezbozhnichat*, 'to be an atheist;' from this verb, again, come a number of derivatives, giving to the verbal idea the form of adjective, agent, act, and so on: the abstract is *bezbozhnichestvo*, 'the condition of being an atheist;' while, once more, a new verb is made from this abstract, namely *bezbozhnichestvovat*, literally 'to be in the condition of being a godless person.' A more intricate synthetic form than this could not easily be found in Greek, Latin, or Sanscrit; but it is no rare or exceptional case in the language from which we have extracted it; it rather represents, by a striking instance, the general character of Russian word-formation and derivation." *

This, Professor Whitney holds, shows the futility of attempting to maintain that there has been "an uninterrupted and universal reduction of the resources of synthetic expression among the languages of the Indo-European family," demonstrating conclusively that even the members of a linguistic family differ in synthetic capacity.

These examples of the synthetic power in the Sanscrit and Russian languages show that the synthesis of a large number of elements into the form of a word is not a trait peculiar to the Indian languages; Duponceau and his followers maintain not only that this exuberant synthetic capacity prevails in all known Indian tongues, but also that all these synthetic forms are based on one common model distinctively peculiar to these aboriginal languages; but, if Dr. Brinton's definition of what constitutes incorporation be accepted, then the Sanscrit and the Russian may be confidently said

* Language and the Study of Language, p. 281.

to form their words and word-sentences on the theoretic ground-plan conjectured to be the pattern of all the grammatic structures of the American Indian tongues.

Can it, therefore, be asserted that the Sanscrit, the Russian, and their congeners belong to a family of languages based on a model common to that of the American Indians? As there is no ground-plan common to all the well-known Indian tongues, such an assertion cannot well be made. They, like the languages of the old hemisphere, have traits which are found in the majority of languages and they also individually have others which are idiomatic.

Again, Dr. Brinton says:

"As the effort to speak in sentences rather than in words entails a constant variation in these sentence-words, there arises both an enormous increase in verbal forms and a multiplication of expressions for ideas closely allied. This is the cause of the apparently endless conjugations of many such tongues, and also of the exuberance of their vocabularies in words of closely similar signification. * * * Languages structurally at the bottom of the scale have an enormous and useless excess of words. The savage tribes of the plains will call a color by three or four different words, as it appears on different objects. The Eskimo has about twenty words for fishing, depending on the nature of the fish pursued. All this arises from the 'holophrastic' plan of thought."

But Dr. Brinton does not show this by the convincing method of citing unequivocal facts of language. He evidently overlooks the impossibility of speaking in words without the use of sentences. What evidence has he adduced to prove that the structure of any one Indian tongue is the product of an "effort" to speak in some specific manner. The truth of the matter is that the speakers of Indian languages are just as powerless consciously to change the habits of their several idioms as are the speakers of Indo-European and other tongues.

The statement that certain Indian tongues call a color by three or four different names as it appears on different objects is due to erroneous information. The explanation of this difficulty is this: the three or four different names or words are not names of only one color, but rather of as many colors, or, strictly, as many shades of the same color as have received appellations in the language in question. In the English, one says "a gray horse," but "a dun cow;" "a bay horse," but "a red apple;" "a yellow dog," but "a hazel eye," etc.

The other remark, stating that the Eskimo possesses twenty words for fishing, "dependent on the nature of the fish pursued," is to be explained in a similar manner, because it is obvious that the *different means* and *methods* of fishing necessarily require *different* words for their designation. In like manner the Missionary Butrick, who preceded Jarvis and Pickering, stated that the language of the Cherokees, owing to its incapacity for generalization, has fourteen verbs to denote washing different things, but no verb to denote washing in general. An analyzation of the fourteen examples given shows that they are not all verbs denotive of washing; some signify "to swim," others "to soak," others "to wet or sprinkle," and still others "to boil," which, of course, it would be folly to classify among the verbs meaning to wash or lave. Thus, a rational explanation is supplied for what appeared to be an anomaly in language.

In speaking of the elements used in polysynthesis and incorporation Dr. Brinton says (*op. cit.*):

"As polysynthetic elements we have the inseparable possessive pronouns which in many languages are attached to the names of the parts of the body and to the words for near relatives; also the 'generic formatives,' particles which are prefixed, suffixed, or inserted to indicate to what class or material objects belong; also the 'numeral terminations' affixed to the ordinal numbers to indicate the nature of the objects counted; the negative, diminutive, and amplificative particles which convey certain conceptions of a general character, * * * but are generally not words themselves, having no independent status in the language. They may be single letters or even merely vowel-changes and consonantal substitutions, but they have well-defined significance."

Again (*op. cit.*), he says:

"Although in polysynthesis we speak of prefixes, suffixes, and juxtaposition, we are not to understand these terms as the same as in connection with the Aryan or with the agglutinative languages. In polysynthetic tongues they are not intended to form words, but sentences; not to express an idea, but a proposition. This is a fundamental, logical distinction between the two classes of languages."

In Iroquoian and Algonquian speech the names of the parts of the body are not inseparably connected with "possessive pronouns," nor do they employ "numeral terminations" to indicate the "nature of the objects counted." Dr. Brinton endeavors to make a distinction between "prefixes, suffixes, and juxtaposition," when used in reference to Aryan and agglutinative languages and when they refer to flexions in Indian languages, on the erroneous

ground that in polysynthetic tongues their function is "not to form words, but sentences; not to express an idea, but a proposition." A more misleading statement or a more lamentable confusion of terms regarding the function and use of flexions in language it would be difficult to equal. There is nothing in the use and historical development of flexional and formative elements in those Indian languages which have been thoroughly studied by the scientific methods of modern linguistics to warrant the assumption that formatives and flexions are employed solely for the purpose of forming sentences, and that they do not compose essential parts of words. Such a contention can rest solely on the tremendous assumption that every Indian necessarily knows the etymology—the component parts or constitutive elements—of each word he employs. The science of language stands opposed to such fanciful assumptions. Moreover, this is another proof, if such be needed, that the doctrine of polysynthesis rests on a fundamental misconception of the phenomena of linguistic growth and development, for its methods and means of linguistic growth do not conform to those established by the science of language. In a science so well constituted as is that of comparative linguistics, groundless assumptions should be avoided. In a science of this character, research to be fruitful of substantial and trustworthy results must converge toward a self-sustaining and continuous development. The findings of to-day must enlarge without overturning the conceptions of yesterday, and thenceforward there must be "system, but no systems;" facts and reasons must take the place of authorities. But, in the fruitful field of American Indian linguistics, there appears to be no common method or system of study, and for this reason every important question pertaining to these tongues is in dispute, with no recognized criterion by which the accuracy and trustworthiness of any result, system, or conclusion may be tested. This is the soil in which controversy flourishes. It is too much the custom to quote authors rather than to give facts, although the authors quoted may or may not have known a reason for what they wrote.

After citing from Lacombe's Cree Grammar an analysis of a nominal compound-stem, Dr. Brinton remarks, in referring to the constitutive elements thus found:

"Not a single one of the above elements can be employed as an independent word. They are all only the raw material to weave into and make up words."

And, from Father Montoya's *Tesoro de la Lengua Guarani,* he adopts the following remarkable statement:

"The foundation of this language consists of particles, which frequently have no meaning if taken alone; but when compounded with the whole or parts of others (for they cut them up a great deal in composition) they form significant expressions; for this reason there are no independent verbs in the language, as they are built up of these particles with nouns and pronouns."

Then Dr. Brinton says:

"This analysis, which Montoya carries much further, reminds us forcibly of the extraordinarily acute analysis of the Cree (Algonkin) by Mr. James Howse. Undoubtedly the two tongues have been built up from significant particles (not words) in the same manner." *

This species of "extraordinarily acute analysis" amounts virtually to this, that it finds in certain languages "significant expressions," formed by compounding together certain meaningless particles with fragments of other equally meaningless particles, and this, it is claimed, is the method of word-forming pervading the Indian languages. This is romance and not comparative grammar. Words can be modified by other words only. Relations of ideas must necessarily be indicated by words which, by the tropic action of metaphor, will eventually be formatives and flexions.

Abandoning his first but truer impressions of these Indian tongues, expressed ten or twelve years earlier in his report, Duponceau, in his Mémoire, adopts the fallacious doctrine since called holophrasis. Here (p. 249) he says:

"The grammatic forms of these languages are in perfect harmony with the method in which they form their words; the same system rules everywhere; and everywhere one sees the absence of the spirit of analysis. *We had believed at one time that analysis should precede synthesis;* but *more profound researches* and *deeper reflections* have convinced us that the synthetic forms that characterize these idioms result from the inability of those who formed them to analyze the concrete ideas which presented themselves to their imagination, and they have sought to express them *en masse,* as they have perceived them."

This, in short, is the foundation of Dr. Lieber's doctrine of holophrasis and adopted by Dr. Brinton. It is due wholly to a confounding of the analytic mode of expression with mental analysis.

* P. 82.

In arguing from a theoretic standpoint against the doctrine of a primitive oligo- or monosyllabic stage of development in the Indo-European family of languages, the late M. Renan follows the same line of argument that Dr. Lieber adopted in support of holophrasis. M. Renan says (Origin of Language, seventh chapter):

"Another characteristic which the progress of comparative philology authorizes us to attribute to primitive language, as in general to creations of the primitive human mind, is the synthesis and exuberance of its forms. It is too often imagined that simplicity, which, relative to our analytic processes is anterior to complexity, is also anterior in the order of time. This is a vestige of the old usages of the scholastics and of the artificial method which logicians employ in psychology. * * * Far from this beginning by analysis, the first act which it (the mind) proposes is, on the contrary, complex, obscure, synthetic; all is heaped together and indistinct. * * * The idea is expressed at first with its entire *cortege* of determinatives and in a perfect unity. * * *

"The history of different systems of conjugation gives place for analogous considerations. In our modern languages the subject, the verb, and the several relations of time, mode, and voice, are expressed by isolated and independent words. In ancient languages, on the contrary, these ideas are most often comprised in one single word; *amabor* contains the idea of *to love*, the indication of the first person, that of the future, and that of the passive. * * *

"Agglutination must have been the dominant process of the language of primitive men, as synthesis, or rather syncretism, was the characteristic of their thought."

The criticism of these views by the distinguished linguist, Prof. W. D. Whitney, is cogent and effective; and since the argument of Professor Whitney embodies the writer's views on the subject of holophrasis as defined by Dr. Lieber, it will be given here entire. Professor Whitney says:

"The synthetic forms which we are asked to regard as original have not the character of something indistinctly heaped together; they contain the clear and express designation of the radical idea and of its important relations; they represent by a linguistic synthesis the results of a mental analysis. The idea is, indeed, *conceived* in unity, involving all its aspects and relations; but these cannot be separately *expressed* until the mind has separated them, until practice in the use of language has enabled it to distinguish them, and to mark each by an appropriate sign. In *amabor*, the (Latin) word cited as an example of synthesis, are contained precisely the same designations as in the equivalent English analytic phrase, "I shall be loved;" *ama* expresses "loving;" *bo* unites future-sign and ending designating the first person; and the *r* is

the sign of passivity. Who can possibly maintain that a system of such forms, gathered about a root, exhibits the results of experience, of developed acuteness, in thought and speech, any less clearly than the analytic forms of our English conjugation? The two are only different methods of expressing the same 'array of determinatives.' The first synthetic mental act, on the contrary, is truly represented by the bare root: There all is, indeed, confused and indiscrete. . . M. Renan, in short, has made a very strange confusion of analytic style of expression with mental analysis: All expression of relations, whether by means that we call synthetic or analytic, is the result and evidence of analysis." *

This reasoning thoroughly dissipates the position taken by Dr. Lieber in support of the doctrine of holophrasis. Although written in view of the languages of the Indo-European family, it applies with equal force to the languages of the American aborigines, the word-sentences of which are the same in kind with those of the former.

The comparison of linguistic forms to ascertain probable linguistic affinity can be used with extreme caution and to a limited extent only. The information and data for such a study must be accurate and trustworthy in an unexceptional degree; even then its results must, in a measure, be necessarily of doubtful value, since the scientific method of the science of language demands that no human nature different from the one we know be made a factor in the problem, and the human organism, under like conditions, acts with more or less uniformity.

Linguistic classification by means of morphologies—grammatic and syntactic accordances alone, like that by the genetic method—the historically traceable identity of elements—is, of course, incompetent and of no force to affirm or to deny identity or possible correspondences among the ultimate elements of some or all linguistic groups—accordances antedating all, even partial, grammatic development, because its right to be rests on the development of the parts of speech and their flexions—the derivative and the syntactic processes; beyond these, the tokens of the grammatic period, it cannot take us. This is of course true, because in every language the earliest records of men can carry us back only to a point far distant from the genesis of its peculiar structure and still more distant from the beginnings of human speech.

* Op, cit., pp. 285, 286.

The foregoing paper was read before the Anthropological Society of Washington. In the discussion which ensued the following remarks were made by Rev. J. Owen Dorsey:

Several weeks ago Mr. Hewitt requested me to examine the assertions of Duponceau and others which have been criticised to-night, in order to ascertain whether those statements agreed with what I had found in the languages of the Siouan and Athapascan families. In consequence of this examination I have been forced to the conclusion that the assertions of Duponceau and others respecting the structure of Indian languages should be modified, so far as the Siouan and Athapascan languages are concerned. A few examples, out of many that I can furnish, must suffice at present, but I think that they will show the justice of my conclusion.

On page 117 of Duponceau's Mémoire it is said:

"Chacun fait un mot à sa manière, qu'il accompagne de signes, et qu'on entend en partie par intuition."

I have yet to find an Indian tribe to which this applies. It is not true that among the Siouan tribes, for instance, spoken language is invariably accompanied by gestures, though signs are made now and then, just as they are made by Frenchmen or Italians in their conversation. Many a time has an Indian crier gone around the village on a dark night, when no gestures could be seen, and yet his words have been understood by the people. No Siouan Indian could "make a word in his own way;" he had to conform to fixed laws, else his speech could not be understood.

On page 118 the same writer observes:

"Ont ils voulu, par exemple, donner un nom à un certain arbre, ils n'ont pas pensé à le désigner simplement par le fruit, ou par quelque autre apparence unique; mais ils ont dit; *l'arbre portant tel* fruit et dont les feuilles ressemblent à telle chose."

No Siouan Indian speaks thus of any of the flora of his land. Of specific tree names in the Biloxi language I have recorded over two dozen, and only in three does the word for tree appear as part of the name, and in each of these three the compound ends with *udi*, trunk or stock. This last word has its equivalent in the tree names of the other Siouan languages. In Dakota, choke-cherries are *chanpa*, and choke-cherry bushes *chanpa-hu*. A plum tree is *kanta-hu* in Dakota (from *kanta*, plum, and *hu*, trunk or stock), and *kande-hi* (from *kande*, plum, and *hi*, trunk or stock), in Dhegiha

Many other tree names could be given, in most of which the name is formed by the simple juxtaposition of the elements. The alleged expression of case by the inflection of verbs governing nouns does not exist in Siouan languages, unless it applies to the instrumental form of the verb (as *man iui*, he was wounded with or by an arrow: *man*, arrow; *i-*, instrumental prefix to the verb; *u*, to wound), which sometimes has a locative force, as in *dhie dhan iui*, he was wounded *in* the side. On the contrary, in the Biloxi, the nominative and objective signs are suffixed to nouns and pronouns, instead of being attached to the governing verb. There are no instances of the "particular plural" in the languages which I have recorded, although the dual often appears in the verb and some other parts of speech. In Dakota, Dhegiha, etc., there is a first person dual in the verb; in the Tutu and cognate Athapascan languages of Oregon, the verb has a dual in all three persons, and so has the pronoun. Duponceau speaks of "a new concordance of tense of the conjunction with the verb." This does not appear in Siouan languages.

A single Cree compound is given as an example of polysynthesis in nouns, and this word is declared by so high an authority as Dr. D. G. Brinton to be a *fair* example. We should not be content with a single example, especially when that word (the name for cross) seems to be a modern word, introduced after the arrival of the missionaries. Just here let me quote Dr. Brinton. On page 21 of his article on Polysynthesis and Incorporation he says:

> "While the genius of American languages is such that they permit and many of them favor the formation of long compounds which express the whole of the sentence in one word, this is by no means necessary. Most of the examples of words of ten, twenty or more syllables are not genuine native words, but novelties manufactured by the missionaries."

I know by experience how difficult it is for a missionary to convey to the minds of his hearers certain religious ideas. Again and again did I try when missionary to the Ponka Indians to find the proper Indian word for *kingdom*, in order to make even an approximate translation of the petition, "Thy kingdom come." The Cree word for cross (if it be, as I suspect, a modern word) is as poor an illustration of what the author contemplated as is the Mexican name for *goat* given by Dr. Whitney on page 348 of his work entitled "Language and the Study of Language," as there is no species of goat indigenous to the Western hemisphere. Any one who has lived among Indians knows the worthlessness of adducing modern

names (*i. e.*, names of objects introduced among the Indians since the arrival of the white race on this continent) for the purpose of illustrating the structure of an Indian language. As far as I can judge from such illustrations of polysynthesis in nouns, no such process occurs in the Siouan languages, nor can I recall any instance of it in the Athapascan languages of Oregon.

Dr. Brinton refers to "generic formatives," by which, I suppose, he means classifiers. These classifiers are found in the Athapascan and Siouan languages, and they perform several functions: sometimes they indicate to what classes objects belong (the sitting, standing, reclining, etc., of the Athapascan and Siouan; the earthy, mushy, watery, stony, etc., of other languages); sometimes they distinguish between the subject and the object of an action, etc. Numeral terminations, indicating the nature of the objects counted, are unknown in the Siouan languages; but in the Athapascan languages of Oregon there are two series of numerals, the human and the non-human.

We are told that polysynthesis is a characteristic which distinguishes American Indian languages from those of the old world. Is there nothing of the nature of so-called polysynthesis in the Aryan languages? In Greek, *δεισιδαίμων* is explained by *ὁ τους δαίμονας δείσας*; *ἐπιχαιρέκακος* by *ὁ τοῖς κακοῖς ἐπιχαίρων*; *κακοδαίμων* by *ὁ κακὸν δαίμονα ἔχων*; *ἔνθεος* by *ὁ τὸν θεὸν ἐν ἑαυτῷ ἔχων* (Kühner, Greek Gr., New York, 1864, p. 296). The Sanscrit was especially distinguished by its power of forming compounds of any length, and one of the greatest difficulties of the language lies in the finding out the exact relation of the different parts. Thus, a Hindu could speak of a man as being "tiger-king-hand-sword-killed" (a very moderate compound). This would mean "killed by a sword in the hand of a king who was like a tiger."*

On pages 16 and 17 of the article on polysynthesis and incorporation Dr. Brinton says:

> "As the holophrastic method makes no provisions for the syntax of the sentence outside the expression of action (*i. e.*, the verbal and what it embraces), nouns and adjectives are not declined. The 'cases' which appear in many grammars of American languages are usually indications of space or direction or of possession and not case-endings in the sense of Aryan grammar."

* Peile, Philology, N. Y., 1877, pp. 77, 78.

What are case-endings in the sense of Aryan grammar? Kühner informs us that "all the relations which the Greek denotes by the genitive, dative, and accusative were originally considered relations of *space*."* The relations of time and causality also were regarded as relations of *space*. Whitney remarks that out of the seven cases "three of them distinctly indicated local relations: the ablative denoted the relation expressed by *from;* the locative that expressed by *in;* the instrumental that expressed by *with* or *by*."† To these Peile adds the dative, denoting the relation expressed by *to* or *towards*.‡ Can any one explain away these words of Kühner, Whitney, and Peile?

The learned author of "Polysynthesis and Incorporation" informs us that "a further consequence of the same method" (*i. e.*, his method of polysynthesis) "is the absence of true relative pronouns, of copulative conjunctions, and generally of the machinery of dependent clauses." In Siouan languages there are copulative conjunctions. That there are words which perform the functions of relative pronouns may be seen from the following sentences:

Mazhan	dhan	ankikandhai	te	andhia	tangatan	ebdhegan—I
Land	the	we desire for ourselves	the (which)	we fail	we shall	I think

think that we shall fail to obtain the land which we desire for ourselves.

Nuzhinga	dhii	dhinke	e	azhi	ha.	Panka	azhi
Boy	gave it to you	he who	that one (aforesaid)	another	.	Ponka	another

shange	tan	ihan	tan	adhin	aka	e	gdhizai
horse	the standing	his mother	the standing	has	he who (subject)	that one (aforesaid)	took his own

shangetazhinga—The youth who gave it to you is not the one (who
colt

now has the stray colt). He who has taken it is the Ponka who has the colt's mother.

Unless one has before him one or more series of sentences, such as occur in myths or epistles, he is hardly in the position to speak with authority, at least so far as dependent clauses are concerned.§

* Op. cit., p. 373.

† Op. cit., pp. 271, 272.

‡ Op. cit., pp. 102–106.

§ For examples of dependent clauses in the Siouan languages see my Madison address, "The Biloxi Indians of Louisiana," p. 16, and "Contributions to North American Ethnology," vol. 6, pp. 582, 585, *et passim*.

On page 16 Dr. Brinton says that "the subject is usually a pronoun inseparably connected or, at least, included within the tense sign," and in the same paragraph he speaks of the tense sign preceding the subject. This cannot apply to Siouan languages. In those languages the tense sign, when any is used, follows the subject, and is usually near the end of the clause or sentence.

An-wan-khpa-ni, "I am poor," in Dhegiha cannot be "My being poor," as the pronominal fragment is *anwan*, which is objective, as shown by the vowel *a*, whereas the possessive and dative of the first person would have the vowel *i*.

MENOMONI CULT SOCIETY.—The last annual meeting of the Menomoni cult society, usually designated as the Grand Medicine Society, shows conclusively that its days are numbered. The Government has been endeavoring to dissuade this tribe, as well as the Ojibwa and others of the Algonquian linguistic stock, from holding such meetings and to adopt some creed of Christian faith. Neither the Government nor the church has shown much power in this direction, but the society will become extinct of its own accord, as the old men, the fanatical pagans, are rapidly dying off, while the young men take but little interest in the ceremonies, looking upon them as farcical and of no special consequence.

The Menomoni society initiate a new member whenever death removes one from its fold. The initiates, both this year and last, were little girls, the last one to enter being only four years of age and not sufficiently vigorous to bear the strain of an ordeal of twenty-four hours. Women and girls are now, no doubt, in excess, the male membership consisting of the eldest and most decrepid men of the tribe.

W. J. HOFFMAN.

THE PENNSYLVANIA-GERMAN SOCIETY will hold its annual meeting at York, Penna., about October 14. The society is in a very flourishing condition, has a large membership, and was organized several years ago for the purpose of collecting and preserving all facts relating to the early settlement of the State, the former customs and folk-lore of the people, etc. The society publishes an annual report of operations.

"La Mensuration du Cou."—In Tome VI, No. 10, 1893, of *Mélusine*, there is an interesting article, the joint production of MM. Gaidoz and Perdrizet, on the size of the neck as an index of nubility and virginity in both male and female persons in the popular beliefs current among various folk. Citations are given from various authors, among others, C. Valerius Catullus, Vossius, Scaliger, Ellis, describing the custom of measuring the neck. The question was discussed in 1888 by the "Société d'Anthropologie de Paris," and the discussion was published in the *Bulletin de la Société d'Anthropologie de Paris*, 4th series, Tome XI (1888), pp. 459 et 472. The following quotation from the article will show its nature: "Aiez une éguillée de fil blanc, mesurez avec ce fil la grosseur du cou de la fille, puis vous doublerez cette mesure, et vous en ferez tenir les deux bouts à la fille avec ses dents, et vous étendrez ladite mesure pour faire passer sa tête; si la tête passe trop aisément, elle est corrompue; si elle ne passe qu'à peine, assurez-vous qu'elle est pucelle." *Secrets merveilleux de la magie naturelle et cabalistique du Petit Albert*, etc., 1743, 21 p. Among the Kabyles thè puberty of young men is determined solemnly in this manner, according to the excellent work of MM. Honoteau and Letourneau, "La Kabylie."

J. N. B. Hewitt.

The Terraba Language.—The Terraba or Tiribi Indians form at present a small cluster of aborigines dwelling on the west or Pacific side of Costa Rica, Central America. They speak a dialect related to all the other Costa Rican languages, which form one family, and are themselves related to many of the South American tongues of the Maipure connection. H. Pittier, professor of the physico-geographic institute at San José, the capital, calls it neither harmonious nor elegant, but harsh in sound and for us unpronounceable in many of its terms. Another name for it, as he states, is "the idiom of Brurán." With C. Gagini he, in 1892, published an "Ensayo lexicografico sobre la lengua De Térraba," printed at the government printing office at San José, and containing, in ninety pages, the grammatic elements, a long list of words, phrases, sentences, and two correspondences, with interlinear translation.

A. S. Gatschet.

THE KUSKARAWAOKES OF CAPTAIN JOHN SMITH.

BY WILLIAM WALLACE TOOKER.

Who were the *Kuskarawaokes*, and what was the signification of their name, are questions which have often puzzled those who have delved into the archives of aboriginal history or searched among the tortuous labyrinths of Indian traditions.

The total amount of our knowledge relating to this tribe of Indians is very meagre, and even that brief portion has not been analyzed with the care that it deserves. Their annals, after the departure of Smith from the Virginia colony, was a blank for many years. We can assume that they were frequently visited by Spelman, Argall, Croshaw, and others for the purposes of trade and traffic;* but no one continued the narrative of subsequent events with the historical and descriptive minuteness that characterizes the recital of Captain John Smith the intrepid Englishman. The more we study his works the more we learn and the higher the man rises in our estimation. Would that all who followed in his footsteps had performed their work half so well.

Many causes contributed their portion toward the obliteration of the *Kuskarawaokes* as a tribal organization, and which led finally to the subjugation and absorption of the remnant by neighboring tribes. In consequence, after the lapse of many years, when the settlement of their immediate country was begun by the English, nothing was left but their name as perpetuated by Smith, the decaying shells that whitened the sites of their villages, and the grassy circles that indicated the location of their wigwams.

Rev. Wm. M. Beauchamp, in his recent notes to Cusick's Six Nations,† suggests that Captain John Smith may have meant the *Tuscaroras*, by the *Kuscarawaokes*, a southern tribe. This is an utter impossibility, if we are to believe the linguistic evidence that can be brought to bear and accept what Smith has written upon this subject. The word *Tuscarora* might seem to have some affinity

*Smith's Works, Arber, pp. 503, 511, 586.

†Iroquois Trail, etc., 1892, p. 98.

with the word *Kuskarawaoke*, at the first glance, without due study and research; but the fact that the *Tuscaroras* lived in another section of the country, were of *Iroquoian* stock, spoke their language, and that their name, according to Mr. Beauchamp, should be translated as "the shirt-wearing people," or, as they term themselves, *Skau-ro-na*, "wearing a shirt," entirely prohibits this hypothesis of Mr. Beauchamp. Not only for the reasons given, but the additional one that the name *Kuskarawaoke* is absolutely pure Algonquian, as its analysis proves.

The *Kuskarawaokes* were one of the tribes who were found located, in 1608, on the eastern shore of the Chesapeake bay; consequently were not a southern tribe from Smith's point of view, although they were from an Iroquoian standpoint. In Smith's relation of their discovery* he says: "Repairing our sailes with our shirts we set saile for the maine, and fell in with a pretty convenient river on the east called Cuscarawaok. Here doth inhabite the people of *Sarapinagh, Nause, Arseck, and Nantaquak, the best marchants of all other savages.*" He also tells us of the river of *Kuscarawaok*, upon which he found seated a people with 200 men, On his map he locates a king's town called there *Kuskarawaok*, on a river abbreviated to "*Kus flu.*" While the surrounding country is marked as being under the dominion of this king, thus intimating that the term applied to all the tribes on the river, Smith's statement that there were only 200 men here would make on a very liberal estimate a total population of five hundred souls. As he mentions only four villages, and *Sarapinagh*, being the first mentioned and possibly the largest, was probably the real name of the one marked on the map as *Kuskarawaok*, and in *Sarapinagh* we find a duplicate of the Long Island, New York, *Sagapon'ack*, "a hard, ground-nut place," the stream, no doubt, is the one now known as the Nanticoke river. In the opinion of the best authorities, Bozman,† Dr. Brinton,‡ and Mr. Mooney,§ it is considered that the tribe afterward known as the *Nanticokes*—who took their name originally from the village that Smith calls *Nantaquak*, "a point of land on a tidal stream"—included the descendants of all those river Indians

* Smith's Works, Arber, pp. 414, 415.
† Hist. Maryland, vol. i, pp. 112, 114.
‡ Lenape and their Legends, p. 23.
§ Amer. Authopologist, vol. ii, p. 261.

who had survived the inroads of the *Massawomeks*, the *Sasquesahanoughs*, and other predatory tribes.

Smith imparts some facts in connection with this people which seem to have been entirely overlooked by all who have written upon the subject of the shell-money of the aborigines. It is remarkable that Dr. J. Hammond Trumbull did not recognize its bearing and quote it among his many notes on wampum. The only inference to be drawn from his neglect is that it must have remain unseen, although no one has been more thorough and painstaking in this line of etymological research than he. Prof. William H. Holmes, in his splendid memoir, "Art in Shell of the Ancient Americans,"* by far the best essay ever written on this theme, has also overlooked this passage.

These omissions have been partially due to the scarcity and inaccessibility of the various editions of Smith's works, now made easy of access to all scholars by the editing and publishing of every English edition of Smith's time, in one volume, by Prof. Edward Arber, of Birmingham, England.

The truths given to us by Smith are highly interesting and instructive, and not only bring up problems of Indian trade and traffic, but throw considerable light on what hitherto have been disputed points, as follows: "The cause of this discovery was to search [for] this mine, * * * also to search what furs, the *best whereof is at Cuscarawaoke, where is made so much Rawranoke or white beads, that occasion as much dissention among savages as gold and silver amongst Christians.*"† The furs were not a product of the immediate locality, but were evidently brought from afar by other Indians in exchange for the white beads that were manufactured there. Thus it will be seen that the *Kuskarawaokes* were busy workers in the hive of industry, and that their handiwork was eagerly sought after by far-distant tribes, making them "the best marchants of all other savages." With this evidence from our authority, the name resolves itself into the constituent parts of *Cusca-rawran-oke*. This resolution being made, it will be observed that it derives its name from the same combination of circumstances that gave Roanoke island its appellation twenty-three years previous, or now over three centuries ago.

* Second Annual Report of the Bureau of Ethnology.

† Smith's Works, Arber, p. 418.

The prefix *kusk-*, *kusc-*, or *cusc-*, with the verbal formative *â*, as we find it varied by Smith, denotes the action of making or doing, as he translates it. Therefore it is the dialectic parallel of the Lenape objective-intensive root, *gisch* or *kich*, denoting successful action, of which Dr. Brinton quotes numerous examples.* For instance, *gisch-ihan*, "to create with the hands, to make something;" *gisch-ikhan*, "to finish a house;" *gisch-enachk*, "the fence is finished."† It is also related to the Massachusetts *kezhik*, "to make;" *keste-oog*, "they make." Dr. Brinton remarks: "Numerous other derivations could be added. Howse considers it identical with the root *kitch*, great, large.‡ This would greatly increase its derivations. They certainly appear allied. In Cree, Lacombe gives *kitchi*, great, and *kije*, finished, perfect, both being applied to divinity." § Dr. Trumbull, in his notes to *kéesuck*, Delaware, *gischuch*, sun, moon, heavens (compare *keskowghs*, sunnes, J. Smith's Vocab.), says: "This word is related to the animate verb *kezheau*, 'he gives life to,' makes alive (and by which Eliot translates the verb 'creates') signifies, primarily, the sun, as the source of light and heat; (2) the visible heavens, coelum; (3) the space of a day, 'one sun,' || while Dr. Brinton suggests that 'the idea appears to be the beginning of a period of time, with the collateral notion of prosperous activity,'" thus agreeing with Dr. Trumbull partly.

The second component, *Rawranoke* (Smith), "white beads," *Rarenaw* (Strachey), "cheyne" [of white beads] = *Roanoac* of Hariot, and *Roenoke* of the later historians.

To my knowledge Dr. Trumbull has never proposed an etymology for the word *Roanoke*, although referring to it as being the southern term for wampum, the shell-money of the north. In this statement he has simply followed the earlier writers, Beverly, Lawson, Byrd, and others. I may be considered overconfident in suggesting, providing Dr. Trumbull failed to discover it, which seems to be evident, but yet its true synthesis can be given, as I hope to demonstrate satisfactorily to those who are interested in this branch of anthropology. In many Indian geographical names occurring on Long Island, New York, the early settlers, both English and Dutch,

* Lenape and their Legends, pp. 102, 103.
† Lenape-English Dict., Brinton.
‡ Grammar of the Cree, p. 175.
§ Lenape and their Legends, pp. 103, 104.
|| Nan. Club, Rep. of R. Williams' Key, p. 104.

as I have previously shown,* frequently, as recorded in various documents, and some retained to this day, made use of the sound *rau* for *wau*, *ron* for *won*, *run* for *wun*, *rin* for *win*, etc., the retention or use of this sound in many instances being an error of the ear (otosis, as it has been termed), a mishearing, or rather misapprehension of the sounds uttered, according to Dr. Trumbull. In other cases the retention was due to ease of utterance, for getting rid of harsh sounds and making the word more euphonious to the ear. In the Narragansett language Roger Williams used *wau* as a contraction for *womp*, "white," † as in *wau-ômpeg*, "white strung beads," *-ômpeg* being a generic suffix to denote a string of shell-money. Therefore Smith's *raw*, Strachey's *rar*, Hariot's *ro*, being the varying prefix of the same word and translated by Smith as "white," is necessarily identical with Roger Williams' *wau*. In the same language he gives us *anawsuck*, "shells," which also appears in the compound word *suckau-anaû-suck*, "the black or dark-colored shells," the terminal *-suck* (= Eliot's *-sog* or *-suog*) being added to denote the animate plural, leaving the verbal radical *-anaw* or *anaû* (= Massachusetts (Cotton) *anna*, "a shell," corresponding to *-anaw* or *-enaw* of Smith and Strachey), thus making *rarenaw* the equivalent of the Narragansett *wau-anaw*, "white shell;" hence by metonymy used to denote "beads," because primarily small shells were simply perforated and strung, or, as Beverly wrote: "Some is made of the cockel shell, broken into small bits, with rough edges, drilled through in same manner as beads, and this they call Roenoke and use it as peak." ‡

In the third component, which is the terminal affix *-oke* (Smith), *-oc* (Hariot), is found the locative generic for "place" or "country," resulting in the synthesis of *Kusca-wau-anaû-ock*, "a place of making white beads," or with Smith, "where is made so much white beads;" in *Ro-ano-ac*, "a white shell-place." For similar reasons Long Island, New York, was termed *Mitowax* = *Mĕht-anaw-ack*, "the land of the periwinkle" or "the country of the ear shell," and also *Seawan-hacky*, "the seawan country," because the first (*Pyrula canaliculata* and *Pyrula carica*) were found in great abundance, as they are to-day, and that seawan, "loose beads," were manufactured there.

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*Indian names in Brooklyn, Brooklyn Eagle Almanac, 1893.

†Nan. Club. Rep. of R. Williams' Key, p. 176.

‡Beverly, Hist. Virginia.

If I should, with Howse and Dr. Brinton, consider the Delaware root *gisch*, Powhatan *kesk*, as being identical or allied with the root *kitch*, Massachusetts *kishki* or *kutchi*, "principal," "great," "large," "preëminent," used as a prefix to many Indian place-names throughout New England and occurring in *Kiskiack*, a king's town on Smith's map, it would not alter the meaning to any appreciable extent, for then the name would be translated as "the principal place of white beads," the idea of making being collateral; all of which is respectfully submitted to those interested in the study of Indian nomenclature and the early history of the Indian tribes of the Atlantic seaboard.

THE GUNDESTRUP SILVER VASE, discovered in 1891 at the bottom of a peat deposit at Gundestrup, in central Jutland, Denmark, has been fully described in a splendid quarto monograph of 68 pages, by Sophus Müller, entitled "Det Store Solvkar fra Gundestrup i Jylland," published as part second of Nordiske Fortidsminder udgivne af det Kgl. Nordiske Oldskriftselskab, Copenhagen, 1892. The vase exhibits relief sculptures on its upper part, both inside and outside, which are interesting on account of their purely Celtic style. It has a diameter of about 27 inches, a height of about 7 inches, and is hemispherical in form. The silver is very thin at the bottom of the vase, but increases in thickness toward the periphery, and the weight of the whole is 8,885 grammes. Some portions of the vase show that it had formerly been thickly covered with gold, and that more than one artisan was engaged in its manufacture. The sculptures exhibit processions of warriors, trumpeters, quadrupeds, fantastic and real; hunters in the act of killing game, and griffins consecrated to the Sun God of the Celts. Among the deities are observed the Celtic god Cernunnos in the act of strangling a ram-headed serpent, and there are also a number of female deities. Fourteen beautiful phototypic plates illustrate the sculptures in their natural size and other reproductions fill the text. A résumé in French by Eugène Beauvois forms part of the work.

ALBERT S. GATSCHET.

ABORIGINAL REMAINS OF THE PIEDMONT AND VALLEY REGION OF VIRGINIA.

BY GERARD FOWKE.

At the time of the settlement of Jamestown four tribes, called collectively the Mannahoacs, occupied the country drained by the upper Rappahannock; they migrated to the westward and their name was lost among the tribes with which they merged. The James river from the Falls to the Blue Ridge belonged to the Monacans, known to history as the Tuscaroras. The ancient remains of the region probably pertain largely to these peoples.

Jefferson, in his Notes on Virginia, describes a mound opened by him near Charlottesville; it was plainly an ossuary containing the bones of those who died at different times or places and were brought hither for interment. He estimates their number at not less than one thousand. He further relates that about the middle of the last century a party of Indians traveling through this section had, without inquiry or instruction, diverged several miles from their road and taken a straight course through the woods to this sepulcher, where they remained several hours seemingly mourning over the dead. Unfortunately, it is not told to what tribe they belonged.

A mound apparently similar in its construction stood near the Rapidan river, in the northwest corner of Orange county. Some years ago the river cut away more than half of it, exposing above the original surface several strata of human bones. The portion remaining covered an area forty-two by forty-eight feet, and as left by the river was about ten feet high; but the central part was afterward hauled away, so that at the time of exploration in the spring of 1892 not more than one-fourth of the original structure remained. In this were found many deposits or beds of decayed human bones varying in thickness from a mere trace to not less than six inches; the largest measured six by fifteen feet in area. There was no regularity in their position; they were scattered throughout the mound at varying levels. Not more than four strata were exposed in any one vertical section, but it was reported that six layers had been found in digging away the central portion. If the earth had been

taken off in horizontal layers, bones would have been found at twenty or more different levels. It was thus evident that the deposits were made at different times as the bones accumulated, each lot being covered with earth and the mound being then left undisturbed until the next general burial. Bones of infants and children were found, while the teeth of some adults were worn down to the neck. Burned human bones in very small fragments were numerous; in the bone-beds they seem to have been placed at random, but when found with the remains of not more than two or three skeletons they extended in a thin layer beneath the uncharred bones of the latter.

The earth beneath the mound to within ten feet of the margin contained circular grave-pits in such numbers that they encroached upon one another until there was scarcely a spot in which undisturbed earth could be found. These graves were of two kinds—one class having a depth of two feet with a diameter between four and five feet, the other not exceeding a foot in depth and less than four feet across. The former usually contained three layers of bony matter at intervals of about ten inches, the latter seldom more than one layer, and that at the bottom, though in a very few there was a second layer a few inches above.

Owing to the decayed condition of the bones and the manner in which they were massed an accurate estimate of the number of skeletons may not be possible, but there were certainly nearly or quite two hundred and fifty, so the tumulus as completed probably contained or covered the remains of nearly one thousand people.

We know historically that the tide-water Indians placed the bones of their dead in houses built for that purpose, and that the Six Nations, of whom the Monacans were one, gathered the bones of the dead and buried them collectively. It is not improbable that the Mannahoacs, being neighbors to both, had similar customs, and as these mounds are in their former territory and at least one of them was visited by Indians long after the whites had settled in the country, it is probable that they belonged to this tribe.

Along the entire length of the James above the Falls aboriginal village sites are numerous. Unfortunately frequent freshets and long cultivation have, with one exception, rendered impossible any systematic examination of them; but their locations, the character of the relics found about them, and the arrangement of such fire-beds and burial places as may still be traced are in close accord

with what we know of modern Indian villages. The most interesting site yet discovered is near Gala Water, in Botetourt county. In excavating for a railway more than two hundred skeletons were exhumed, with a great number and variety of associated relics. No particular notice was taken of them at the time, but later examination of a narrow strip extending about one hundred and fifty feet along one side of the track showed that on a firm substratum of yellow clay with a practically level surface was a deposit of porous black soil containing great quantities of pottery, burned stones, broken implements, bones of various animals, and all the ordinary remains of an aboriginal village site. They were scattered through the entire depth of black soil in such a manner as to show they had accumulated by gradual accretion, thus indicating a long and permanent occupation of the site. Scores of barbecue holes were found, most of them a little more than three feet in diameter, though some were considerably larger, and extending from two to four feet into the clay. These were filled with earth like that in the stratum above, mingled with all the débris incident to an Indian camp-fire, besides many finely wrought celts, arrow-heads, bone implements, and shell ornaments. In only two were human bones found: in one, part of a child's skull, and in another an adult's skeleton, some of the bones much enlarged and roughened by disease.

All other undisturbed human remains were in rudely dug graves, each barely large enough to contain a body, which in nearly every case was doubled into the smallest possible compass, most of them being laid on the side, though a few were on the back. No grave extended more than a foot into the clay, while some of the skeletons lay above it; among them were remains of very young infants and of persons whose teeth indicated extreme age. Some of the bones showed healed fractures; the right hand of one skeleton was missing, and in the side of one dorsal vertebra an arrow-head was deeply imbedded.

No mounds exist along this stream, but in the narrow valleys drained by its upper tributaries a number may be found, so similar in every respect to those farther east and north that no separate description is necessary.

When the Knights of the Golden Horseshoe had attained the summit of the Blue Ridge they looked westward over a vast expanse of prairie and meadow land destitute of timber except along the streams. Less than twenty years afterward the settlers of this valley rode day

after day through grass that reached their stirrups, seeking spots where they could find timber for building their houses. Like Kentucky, this region was utilized as a hunting ground by various tribes north and south, who annually at the close of their autumn hunt set fire to the dry grass to prevent the sprouting of trees and to ensure an abundant pasture the following year. The Delawares and Catawbas warred continually for its possession; the Iroquois, claiming prior ownership, contended with both. Other tribes, chief of whom were the Shawnees, also resorted here. This is true also of valleys between the Shenandoah and the Alleghanies. Traces of village sites are found along all the streams, and mounds or cairns are scattered sparsely over the country. Cemeteries along the South Branch of the Potomac have yielded, along with the ordinary Indian relics, glass beads, iron hatchets, brass ornaments, etc., proving a modern date for them.

The mounds are of three classes: (1) of earth, (2) of stone, and (3) of the two combined in varying proportions. Two miles northwest of Linville is a mound in a creek bottom subject to frequent overflow. Its height has been reduced by cultivation from eight or nine to three feet, and for many years bones have been plowed out. It is not known to what level above the earth they extended, but the mound and the earth beneath to a depth of two feet were filled over a space thirty-six feet in diameter with human bones in the utmost disorder and confusion. Many of the grave-pits contained the remains of only one or two individuals; others held ten, twenty, or even more skeletons. Where there were not more than two or three skeletons in a grave, relics would be found with them; this was especially the case with infants, with all of whom were quantities of shell beads. Where many skeletons had been piled together, either in the mound or in the graves beneath, little or nothing accompanied them. A few skeletons had all the bones in their proper relative positions, showing interment soon after death, but by far the larger part of the bones had been thrown in at random. For instance, five or six skulls would be in contact, with not a lower jaw near them; a dozen or more femora or tibia would lie side by side like a bundle of sticks. The largest bone-bed measured ten by twenty-five feet level across the top, a foot thick at the central part, and three feet thick at the ends, where it ended in funnel-shaped depressions. Little piles of cremated human bones were scattered at random throughout the structure; sometimes they had been care-

fully spread out and bodies placed on them, or had been placed in the middle of a stratum of uncharred bones. At one point was a saucer-shaped depression four feet across and sixteen inches deep at the center; in the bottom was a bed of mixed ashes and charcoal three inches thick at the center and gradually thinning out up the sides. On this were the arm and leg bones of two adults burned almost to a cinder, with no traces of other bones in the same condition. Above and in contact with them was a spinal column with the vertebræ in their proper positions, and some fragments too decayed for identification. At one end of this was a skull, at the other part of a humerus; none of these showed the slightest trace of fire.

Among the relics were thousands of discoid and marginella shell beads; quantities of columellæ drilled through lengthwise, of which one hundred were over four and a half inches long; thin, delicately worked flint implements; red and yellow ochre; quartz crystals; highly polished celts; steatite and clay pipes; numerous bone needles, perforaters, and polishers; and, chief in interest, two ornaments resembling an old-fashioned "tuck" comb, one of them seventeen and a half inches long, the other somewhat shorter, both showing traces of red and black coloring matter. The last were found in grave-pits, beneath skulls; they appear to be bone, but the variety of bone has not yet been ascertained. Owing to the confusion in which the bones were mingled, the number of skeletons could not be determined with exactness. Omitting all cremated fragments and all pieces that may have belonged with those counted, there were three hundred and eighty-eight skulls. As skulls have been dug and plowed out for many years and the mound much reduced since the first were found, it is probable this was the communal burial place of fully eight hundred individuals.

There was no village or camp in the immediate vicinity, or at least where the earth was obtained, for the structure contained no burnt rocks or earth, no ashes or animal bones, and very few pottery fragments or flint flakes. Generally the skeletons had been laid on the surface of the mound as it stood at the time and covered with soil, but there were indications that graves had been dug to different depths at various times during its construction. Every infant's skeleton was extended to full length, while all others, even children, outside of the bone-beds were closely folded.

Mounds like the above are all found in fertile alluvial bottoms,

while such as will next be described are found on top of ridges or head-lands.

Near Rileyville, Page county, extending transversely across a narrow ridge, is a mound sixty feet long, twenty to twenty-four feet wide, and two to three feet high, being lower and narrower at the middle than nearer the ends. There is a shallow ditch along each side, from which the earth was taken to construct it, and the top is covered with a stratum of bowlders from ten to fifty pounds in weight.

Excavation proved that it was built at three different periods. Two circular mounds were constructed about twelve feet apart on an east-and-west line and the space between afterward filled in, though not to an extent that made the structure symmetrical. The western mound covered two graves: one, near the western edge, measured six feet by eighteen inches; it had been partially refilled with earth—an unusual feature in this region—and bowlders piled over it. A copper crescent six inches long and some triangular black flint knives were in it. The second grave, near the center of the mound, was six by four feet and filled with bowlders, which gradually increased in numbers until at the top of the mound they covered a space eight feet across. This contained a large gorget and two pieces of quartz crystal. Midway between the mounds were two graves, each three by five feet; nothing was in these. Six feet beyond them was one exactly similar.

Across the middle of the eastern mound, on a line nearly north and south, were four pits. The one nearest the northern edge was one by five feet, devoid of contents. The next, six inches wider, contained three gorgets and a large sheet of mica. The third was circular, three feet in diameter; at the center were a paint-cup and a finely polished platform pipe of blue sandstone. The fourth grave, near the south edge of the mound, was two by five feet, and yielded a small gorget and a few scraps of mica. Near the eastern margin were two circular graves, one of them three, the other four feet in diameter. The measurements given apply to the bottom of the graves, the top being larger, owing to the outward inclination of the sides, whose slope was quite irregular. None of them extended into the subsoil, which lies about eighteen inches below the surface. No traces of bone were found in any of them. The longer ones were parallel with the longer axis of the mound, and the position of the relics showed the bodies had been buried with the head toward

the east. All except the first were filled to the bottom with stones. Some of these were flat, with one end lying on the edge of a pit, the other at its bottom or on the slope, showing they had been supported by timber or other substances, whose decay had allowed the inner end to fall. This is common in all mounds containing stone.

The stone mounds or cairns differ from the last only in their smaller size, seldom covering more than one grave, and contain no earth except such as has drifted on them. As in the earth-mound remains, all ages are represented. The greatest number of individuals found in any one of these grave-pits was sixteen.

The number of skeletons found in the Linville and other mounds of its class does not necessarily indicate a large settlement in the vicinity. The entire average population of a community of uncivilized people must die within a period of about thirty years, perhaps even less; so that an ordinary Indian village of three or four hundred souls may have as many as a thousand burials in a century.

The mounds composed partly or entirely of stone are very similar in their construction to those which are known to be due to the tribes roving through this territory within the last three centuries, but with the single exception of a fragment of gun-barrel found in a small cairn in Warren county, nothing has been discovered to indicate dealings with the whites. Their situation and method of construction induce the belief that they were constructed to cover the bodies of those who perished on their annual hunting and war expeditions. The cemeteries yielding modern trinkets are at or in the near vicinity of the towns occupied within one hundred and fifty years by representatives of tribes herein mentioned. The beads, arrow-heads, celts, and ornaments are of patterns common to surface specimens in the same localities, as well as farther to the north and west. A majority of the pipes and gorgets closely resemble in form and material those from the mounds of the Ohio valley. Whether this coincidence is due to accident or to relationship or communication of peoples is an unsettled point.

Altogether there seems no reason whatever for attributing any of the remains of this section to an unknown or a very ancient people. It cannot be denied that such may have existed here; but if they did they either left no traces of their presence or these traces are so nearly identical with those due to the later tribes who hunted or

temporarily lived in the country that it is now impossible to distinguish between the two.

The principal trails between the north and the south followed the trend of the valleys; the Blue Ridge and the Alleghanies seem always to have formed definite boundaries between the permanent possessions of the tribes living to either side of these ranges, and parties crossing them did so with the knowledge that they would probably come in contact with hostile peoples.

As the statement has often been made that no buffalo bones have ever been found in a mound, it may not be amiss to mention here that in a mound near Luray, Page county, very similar in its arrangement and contents to that near Linville, the remains of a young animal of this species (identified as such by Dr. D. S. Lamb, of the Army Medical Museum) were found on the original surface of the ground well within the margin of the mound. Only a part of the skeleton was present, there being no trace of the leg or shoulder bones, but the vertebræ were in their proper position, with the ribs extending into the earth above. It was plain that the animal had been dissected on the spot, a part of the carcass carried away, and the tumulus erected over such portions as were not removed. The human bones in this mound, although it stood in a sandy bottom underlaid with gravel, were so decayed that not one could be removed entire, most of them being as soft and sticky as wet clay.

Annamite Betel Chewing and Salutation.—To anticipate or to render more harmonious the discolorating effect of chewing the areca nut and betel leaf, the Annamite women invariably lacquer their teeth in advance with a black preparation similar to that which used to be affected by the Japanese, and which makes the open mouth like a yawning sepulcher. Should they scrape off this coating they lose caste. The men sometimes lacquer their teeth, but are usually satisfied with nature's discoloration. It is to the same practice that I suppose must be attributed the total absence in Annam of that agreeable mark of salutation which has been sanctified by the practice of so many ages, viz., the kiss. Lips so tainted could hardly embrace. Accordingly the only kiss of which the Annamite woman is cognizant is to place her nose against the man's cheek and to rub it gently up and down, with a kind of canine sniff.—*Curzon in The Geographical Journal, London, Sept., 1893.*

THE WORLD'S FAIR CONGRESS OF ANTHROPOLOGY.

BY W. H. HOLMES.

The scheme of calling together a comprehensive series of congresses as an auxiliary feature of the Columbian Exposition at Chicago was worthy of the great occasion, and on the whole, so far as realized up to date, the undertaking has proved a decided success. In some cases, notably the Congress of Anthropology, the task of unfolding and carrying out the scheme fell to the lot of very busy men already overburdened with executive duties pertaining to the exposition. There was consequently in this particular case a lack of pre-arrangement and preparation, and the program was made up from such papers and materials as could be prepared or assembled on very brief notice. It could not be expected that a congress called together under such circumstances would be signalized by the presentation of a large number of papers of the highest order. Many prominent American students of anthropology were unable to be present, and foreign countries were necessarily in large part unrepresented. The meeting did not, therefore, rise fully to the dignity expected of an international congress, but there were enough earnest workers on hand to fill out the week's program and bring out of the heterogeneous elements results of very considerable importance.

The opening ceremonies, on Monday, August 28th, were conducted in the Assembly Hall of the Art Palace, where an address of welcome was delivered by Mr. C. C. Bonny, President of the Congress Auxiliary, and responses were made by Prof. F. W. Putnam, Director of the Department of Anthropology, and Dr. D. G. Brinton, President of the Congress of Anthropology.

The Congress then assembled in the hall assigned to it in the Art Palace, and was opened by Dr. Brinton, who, in an address on "The Nation as an Element in Anthropology," presented a thoughtful and able exposition of the methods and purposes of modern anthropology. In illustration of his theme, the author traced the development of mankind and social institutions from the primitive state through successive stages to the present condition,

in which development proceeds rather through institutions inspired by the mind of man than along the lines of organic evolution. It was shown that sociology, one of the most intricate branches of modern anthropology, is destined to greatly modify, if not to replace, the more primitive statecraft based on superficial studies of individuals; for sociology is the real science of human institutions which themselves express the emotions, convictions, and experiences of the human species. The especial aim of the address was to exhibit the profound changes bought about by the transition of the social condition from the totemic, gentile, or tribal stage to that of national existence. This was shown to be necessarily associated with far-reaching modifications of the physical man, through the destruction of clan marriages and of matriarchal and patriarchal systems, as well as through other causes; and to lay the foundation for a true ethnic (in place of a tribal) psychology, based on new and often contrasting conceptions of religion, ethics, and jurisprudence. The speaker closed with an expression of belief that the national is not the ultimate stage in sociological evolution, but that it will be followed by an international regime, when neither races nor States will be in antagonism, and that like aims, directed to the benefit of the whole species, will be recognized and pursued by leading minds everywhere.

Beginning with Tuesday, the sessions were held in Recital Hall and Agricultural Assembly Hall, in the exposition grounds. The forenoons were devoted to papers classified under the heads of physical anthropology, ethnology, archeology, folk-lore, religions, and linguistics. The afternoons were taken up mainly with discussions relating to the rich anthropologic materials brought together by the exposition and in the examination and study, under personal direction of the exhibitors, of the more important collections.

Physical Anthropology.—Physical anthropology received a fair share of attention during the meeting. Papers were read by Dr. Franz Boas, secretary of the Department of Anthropology; Dr. Gerald M. West, of the same department; and Dr. Manuel A. Muñiz, chief medical officer of the Peruvian army; and the discussion of the physical laboratories of the Department of Anthropology brought out much that was new and instructive.

Dr. Boas gave an exhaustive summary of the known physical characteristics of the American Indians, in which anthropometric determinations were grouped by natural geographic divisions and

in other ways. The relations between individuals and groups were considered, and the influences of environment, both individual and tribal, were judiciously discussed. In its wealth of details, as well as in its wide-reaching discussion of internal and external influences that affect the primitive human organism, the paper was a noteworthy contribution to American anthropology.

Dr. West, in a paper on "Anthropometry of North American School Children," presented statistical data of much value gathered from a series of exhaustive observations and measurements.

Dr. Muñiz exhibited a remarkable collection of crania illustrating prehistoric trephining, an abstract of his memoir on that subject being presented in English by Mr. G. A. Dorsey. The collection, embracing nineteen crania, was made in Peru, and the specimens show that the operation was performed in the most primitive way, commonly, if not invariably, with rude stone implements, and was frequently successful, one individual having survived three operations. The indications are that the operation was commonly performed to relieve depressed fractures of the skull (probably produced by slingstones) or paralysis resulting therefrom. Dr. Muñiz's collection is by far the richest ever made.

Ethnology.—One morning session was devoted to the reading of papers on ethnologic subjects, the opening paper, by Dr. Brinton, treating of the "Alleged evidences of ancient contact between America and other continents." It was confidently affirmed that tangible evidences of such contact do not exist in any department of American physical or cultural phenomena, and that the analogies on which the theory of contact is based are purely adventitious, arising from correspondences in man and his environment. In the discussion that followed, this view was combatted by Professor Putnam, who presented cases in which the resemblances of phenomena were so marked and the conditions of occurrence so peculiar as to warrant serious challenging of the conclusions reached by the author. Prof. O. T. Mason, Mr. F. H. Cushing, and others took part in the discussion. Professor Mason opposed the views of Dr. Brinton, maintaining that contact was a constant condition to-day in the Behring Sea region, and that interchange has probably not been entirely interrupted for any considerable period of time since the occupation of the American continent began. Mr. Cushing supported Dr. Brinton, taking the position that foreign influences have certainly not been sufficiently strong to seriously affect the trend of

purely American cultural development, and pointing out the fact that as a rule the striking features of native art and institutions can be traced back to their ultimate sources in America.

The arguments, on the whole, may be regarded as inconclusive with respect to the particular analogies to which attention is most frequently called, but there is little doubt that American arts and institutions are flavored with elements, recognizable or not, of the culture of Asia and the Pacific islands, infused from time to time during the occupation of the western continent.

Mr. Walter Hough followed with a paper on "Bark cloth, the primitive textile;" Mr. George A. Dorsey described "A peculiar observance of the Guichua Indians of Peru," and Mrs. M. French-Sheldon made some remarks on "Customs of the natives of East Africa."

Mr. Hough described the art of preparing bark fabrics in common use in tropical and subtropical countries, including Central and South America, the West Indies, Africa, southern Asia, and the Pacific islands. The use of the grooved wooden club or beater was described and its probable relationship to the ribbed stone implements of Mexico pointed out. It was shown that the method is operative only when the filaments of the bast are properly interlaced, the industry being necessarily limited to regions yielding the proper varieties of bark. The art in many cases preceded the use of the loom, and the cloths produced, which were much varied in weight and texture, served numerous and important purposes.

The art of music among our American aborigines received attention in two interesting papers, the first by Miss Alice Fletcher on "Love songs among the Omahas," with vocal illustrations most pleasingly rendered; the second by Mr. J. C. Fillmore on "Primitive scales and rhythms," with demonstrations at the piano-forte. These papers seem to go far toward establishing the theory that the indefiniteness of primitive scales, even the variations of notation noticeable in the same song sung by different individuals or by the same singer at different times among Indians, is due to a distinct, although probably unconscious, feeling for harmony—a seeking after those harmonic chords natural to the scales in which these songs are thus approximately sung. This was illustrated by the fact that the mere melody of an Indian's song, if recorded, then played to him on the piano, was rarely recognized by him; but if played with the harmonic chords proper to it, was almost invariably recognized and

approved. If this claim be true, then primitive songs are simply the undeveloped state of the music of civilization. The fruition of these studies will be looked forward to with exceptional interest.

Dr. Carl Lumholtz spoke of the "Cave Dwellers of the Sierra Madre," the address being much abbreviated owing to lack of time for its presentation. Two tribes, the Tarahumar and Tepehuan, semi-sedentary in their habits, build and periodically occupy scattered dwellings in the caves and rock shelters of the mountains of Chihuahua. They cultivate the soil to a considerable extent, and their arts of pottery, weaving and basketry are decidedly primitive. Their habits and customs as described are of great interest to the student of the tribes of the southwest. Dr. Lumholtz' archeologic collections obtained from the ancient ruins of the same region are of great importance, filling, as they do, a gap in the chain of art groups connecting the Pueblo region of New Mexico and Arizona with the valley of Mexico. A paper dealing with South African ethnography and containing much matter of value was presented by Mr. Richardson, of Cape Town, and Mr. Wildman treated of the culture of the Malay peninsula.

Prof. O. T. Mason, curator of anthropology in the National Museum, read a paper on "Aboriginal American Mechanics," in which he set forth the culture status of the American aborigines with respect to their industries and practical arts. The subject was discussed under the headings of tools, metric apparatus, the application of mechanical principles, engineering and machinery. It was shown that the Americans displayed great ingenuity, patience and coöperation in an area which furnished no other domestic animals save the dog and the llama. The continents were divided into culture or technographic areas, each of which developed its own characteristic activities and in each the native mind had reached to as high a degree of perfection as could be expected of men under their peculiar limitations of environment.

Archeology.—The leading contributions to the archeologic section of the program were papers by Prof. G. H. Perkins, on archeologic investigations in the Champlain valley; Mr. H. C. Mercer, on a flaked stone from the gravels near Madrid, Spain; Mr. Harlan I. Smith, on the anthropologic work of the University of Michigan; Mrs. Zelia Nuttall, on "The Mexican Calendar System," and the various discussions relating to the collections brought together by the exposition.

Mrs. Nuttall's investigations of the Mexican calendar appear to furnish for the first time a satisfactory key to this most highly developed and hitherto most mysterious of all aboriginal American cultural achievements. Without the admirable and ingenious tables and diagrams presented by Mrs. Nuttall, the explanation given by her of so highly complicated a system cannot, howsoever simple, be made plain. The paper was commented on by the president as epoch-making in the progress of such studies in the field of American anthropology, and its great importance as a general contribution was further evidenced in the discussion. It was shown by Mr. F. H. Cushing that a system like the one described by Mrs. Nuttall would almost inevitably result from the naming, symbolizing, and recording of the times and days of such ceremonials as, in an orderly succession corresponding to that of the seasons and phases of the sun and moon throughout the year, are still performed by the priests of Zuñi according to their membership in one or another of the thirteen successively graded cult societies of their tribe. In this way, too, Mr. Cushing thought, the origin of the remarkable permutations of thirteen and twenty, which Mrs. Nuttall has discovered to be so characteristic of the Mexican calendar, may be explained as in all probability developed out of purely mythical and ceremonial requirements into mathematical combinations astronomically correct.

Folk-lore and Religion.—The list of papers presented in these divisions of the program are as follows: "Ritual regarded as a Dramatization of Myth," by Mr. W. W. Newell; "Ritual of the Kwakiutl Indians," by Dr. Franz Boas and Mr. George Hunt; "Walpi Flute Observance," by Dr. J. Walter Fewkes; "Folk-lore of Precious Stones," by Mr. G. F. Kunz; "The Historical Study of Religions," by Mr. M. Jastrow, Jr.; "An Ancient Egyptian Rite," by Mrs. Sarah Y. Stevenson, and "A Chapter in Zuñi Mythology," by Mrs. Matilda C. Stevenson.

In his paper on "Ritual regarded as a Dramatization of Myth" Mr. Newell argued that there are good reasons for considering myth and ritual as two correlated and equally important elements of worship. The ceremonial part cannot be separated from the mythic, for the myth enters into the ritual either by recitation or allusion. Beside, it appears that all religious ceremonies of a gentile or social character contain an element of dramatization. Such is, at any rate, the case with existing faiths, and there is no

reason to deny the principle of historic continuity. In American Indian dances part, at least, of the observance consists in the acting out of myths. The same thing appears to be true of the ancient mysteries, as, for example, those of Osiris. It is difficult to understand why the action should be regarded as in itself more essential than the idea which it represents. It is in modern survivals that we must seek the true character of ancient worship, of which literary reports are so defective. A religion can be understood only when both the myth and the rites are comprehended.

Dr. Fewkes, speaking of "The Walpi Flute Observance," said that abbreviated dramatizations of mythological events, migration legends or historic events, or all three combined, occur in all the nine days' ceremonials of the Hopi Indians. The Walpi flute observance illustrates by dramatization better than any other a historical episode and adds new facts supporting the belief in the composite nature of the Hopi stock. The Hopi legend of the settlement of their country is that the first people to settle on the East Mesa were the Snake and Bear peoples. The next arrival was the Flute people. A realistic dramatization of their reception is biennially performed at Walpi as an episode in the Le-ten-tū or flute observance.

The paper of Mrs. Sarah Y. Stevenson related to a recently discovered and very ancient papyrus, which contained an account of ceremonials pertaining to the ritual of the dead. Of special significance is the manner in which the statutes used in the rites were made alive by elaborate dramaturgic performances and the opening of their eyes and mouths by means of pigments significant of life. The paper of Mrs. M. C. Stevenson described the clan system of the Zuñis and the nature and significance of their worship of water in its various forms.

Languages.—Two papers—the first by Doctor Brinton, on "The present Status of our Knowledge of American Languages," and the second by Doctor Boas, on "Classification of Languages of the North Pacific Coast"—were the only contributions to this division of the program. Doctor Brinton said that the Eskimo and Athapascan and other languages of the extreme north have been carefully studied and much material is accessible regarding them. Those of the northwest coast have received fruitful attention from Doctor Boas. In the United States the Bureau of Ethnology has

prepared an excellent linguistic map of the whole country, which leaves few points of relationship uncertain. A similar plan of investigation has been inaugurated by the Mexican government, but its results have not been published. There is much to be done in that republic, and there is little doubt that wholly unknown stocks will be found there. This is not the case in Central America. We may be reasonably sure we have specimens of every language there spoken. The opinion has always prevailed that there are more linguistic stocks in South than in North America. This is probably an error. Recent studies tend very notably to reduce the many dialects of that continent to a comparatively few stocks—fewer than in North America. The regions which offer the richest fields for the linguist are central and southern Brazil; the highlands of Bolivia and the country to the east of them; the Gran Chaco, and southern Patagonia. In all these districts there are few workers, and much entirely new matter to be collected. Much also remains to be done in publishing manuscript material on American languages.

Doctor Boas said that the languages of the North Pacific coast may be arranged according to their morphology into a number of groups; that, morphologically, languages that show no lexicographical connection show decided relationships; thus Tlingit, Haida, and Athapascan show decided points of resemblance. In the same way Salishan, Kwakiutl, and Chimakuan represent a type by themselves; a third type is the Tsimshian, a fourth one the Chinook. He stated that this method of grouping would probably give fruitful results when applied to other American languages.

The writer of this review was unfortunately absent from the sessions during the reading of a number of important papers and reports upon such are necessarily omitted. It happened also that a few papers were read by title only. Among these are "The fall of Hochelaga: a study in Folk-lore," by Horatio Hale; "A Central group of mounds in Great Britain," by John S. Phené; "Affinities of Egyptian and Indo-European languages," by Carl Abel, and others. It is also probable that by oversight a number of papers deserving mention have been omitted from this review.

An evening lecture on "The Transvaal Country" was delivered by Dr. Mathews, of England. A large number of views were thrown upon the screen and described. In addition, some valuable statistical and historical data were presented.

Consideration of Collections.—The Congress devoted its afternoon sessions to the discussion and study of the extensive collections of anthropologic materials brought together by the exposition. Discussions relating to collections of the Department of Anthropology included papers and addresses by a number of gentlemen connected with the exhibits and others especially qualified to discuss them. Professor Putnam reviewed the history of the department and the progress of the great series of explorations and investigations conducted under his direction. He passed hurriedly over the more important features of the multitude of exhibits brought together by agents of the department and by individuals, states, societies, educational institutions, and foreign governments, and concluded by explaining to the congress his plans and hopes with respect to the prospective outcome of his prolonged and arduous labors—a great anthropologic museum to be established in Chicago.

Papers were read by Dr. Boas and Prof. Joseph Jastrow on the work of the department laboratories, the former treating of physical researches and the latter of psychical phenomena and the methods and appliances of their study. The fine equipment of these laboratories is one of the notable features of the department, and the collaborators have initiated their respective studies in a way that promises results of the very highest importance. It is to be hoped that the favorable conditions under which the work is begun may continue a series of years.

The subject of games was introduced by Mr. Stewart Culin, and remarks were made by Mr. F. H. Cushing, Capt. J. G. Bourke, and others. The collections relating to the evolution of games and the history of gaming brought together by Mr. Culin are of the greatest interest and importance, his exhibit taking a foremost rank among the great group of collections in the Anthropological Department. In completeness of arrangement and exhaustiveness of presentation it surpasses anything of the kind yet seen in any part of the world. This was emphasized by the discussion of the subject before the congress. Mr. Culin, in his rather brief remarks, brought forward surprising examples of analogies between the games of unrelated and even antipodean peoples. These analogies Mr. Cushing explained (as probably indicating independent development along identical lines) in his address on the derivation of gaming from divination with arrows, and on the development and marvelous number and diversity of these arrow-games in America, as so well shown in Mr.

Culin's collections and examples. Captain Bourke, in closing the discussion, affirmed also the more or less sacred and divinistic character of all true primitive American games.

Other papers relating to the department collections were as follows: By Mrs. Zelia Nuttall, on exhibits of Mexican archeology; by Mr. G. A. Dorsey, on his rich and varied collections from South America; by Dr. Emil Hassler, on the ethnology of Paraguay and his unrivaled collections of native feather-work from that region; by Ernest Volk, on "Cache finds from ancient village sites in New Jersey," in which it was shown that in two cases the villagers had brought together small hoards of rudely shaped pieces of argillite; and by Mr. F. H. Cushing, on the "Cliff Dwellers," in which the place of their peculiar culture development was shown to be probably intermediary between that of the archaic nomad and the highest phases of progress in the region. It was also made apparent that the Zuñi Indians were formerly cliff-dwellers, as, according to the best scientific authorities, were other tribes of the region at one or more periods of their history, the occupation extending down to the present period in well-verified cases. It may well be noted here that these conclusions were antagonized by the extraordinary and utterly unreliable teachings of the principal exhibitor of cliff-dwellers' remains on the exposition grounds, through whose agency many erroneous notions respecting these remains have been disseminated among the people of the country.

One afternoon session was devoted to papers relating to anthropologic exhibits in the Government building, where the Smithsonian Institution, National Museum, and Bureau of Ethnology had brought together a display, consisting largely of new and valuable materials relating to ethnology and archeology. Prof. O. T. Mason, representing the National Museum, explained the plan on which the ethnologic exhibit was made. The well-known map of linguistic families north of Mexico, prepared by Major J. W. Powell, was taken as a basis on which to assemble the materials. The aim was to have each leading linguistic stock of peoples represented by collections of art products and by groups of life-sized figures engaged in characteristic arts and industries arranged serially in the alcoves. The groups illustrate the arts of weaving, basket-making, pottery, milling, baking, tanning, stone-working, silversmithing, bark-writing, pictography, etc., and various games and ceremonies. Numerous other figures are intended to illustrate costumes, physical characters,

habits, and customs. Lack of time for preparation and limitations of space prevented the full development of a scheme that promises to be of much importance in object-teaching and museum arrangement. The linguistic stock map aided the speaker in setting forth the distinctions to be drawn between the four fundamental concepts of ethnology, to wit: 1. Blood or race, which is a purely zoölogical idea; 2. Languages, studied in themselves and as indices of race; 3. Nationality, which is a purely social notion; 4. Arts, which belong even more to region than to tribe or language or race.

Mr. W. H. Holmes, representing the Bureau of Ethnology, called attention to the exhibits of archeologic material made by the Museum and Bureau. The principal exhibit illustrated systematically for the first time the arts of mining and quarrying and the manufacture of stone implements by the aborigines. Illustration of the history of flaked stone implements by the classification and grouping of quarry-shop products was the leading feature of the exhibit. Diagrams were presented intended to show that stone implements must be studied in the same manner as the naturalist studies living creatures. There is a development of the individual implement from its inception in the raw material through a series of stages to the perfected state. There is an evolution of species, beginning with the first stone implement shaped by the hand of man and advancing through the ages, changing, specializing, and differentiating until the various groups, the species, orders, and families are developed. A full and correct interpretation of the varied phenomena of implement-making is essential to the student who would venture to employ the products of men's hands in the elucidation of his early history.

Mr. F. H. Cushing, of the Bureau of Ethnology, spoke of the Zuñi dramatic recital of the epic ritual of creation illustrated in the exhibit by a group of the three leading priestly characters engaged in that ceremonial.

Dr. Cyrus Adler, curator of religions in the National Museum, described the exhibit illustrative of the history of religions and reviewed the subject of the representation of his department of investigation in the museums of the world. He described the collections of the Musee Guimet at Paris, the Lateran Museum at Rome, the Arab Museum at Cairo, and other religious collections, as well as special displays, such as the Papal exhibitions in Rome in 1887, the Anglo-Jewish exhibition in London in the same year, and others.

In concluding he outlined a scheme for a section of religions in the United States National Museum, which is to be set up in the near future.

The wonderfully varied exhibits of the Columbian Exposition afforded ample diversion to the members of the congress. One evening was spent witnessing dances of the Kwakiutl Indians of the northwest coast, and visits to the Midway Plaisance, with its American Indian and Eastern primitive villages, oriental and barbarian dances, oriental jugglers, trained animals, ancient Greek portraits, German museum, etc., were features of the occasion. The closing event on Saturday evening was a dinner served at the German restaurant, on which occasion speeches of gratulation and farewell were made.

Concluding Remarks.—The Anthropologic Congress of itself probably marks no epoch in the history of the science of anthropology, taking rather the character of a suitable and withal satisfactory feature of the Columbian Exposition, serving an important function in giving emphasis to the value of the great assemblage of anthropological material there brought together. The great richness of the American field of investigation was made apparent to all. The importance of the outcome of the whole group of anthropologic features connected with the fair depends largely on the action of Chicago with respect to the opportunity of the century in museum-making.

A plan has been matured looking to the publication of the proceedings of the congress. Members have raised a fund of upward of five hundred dollars, but it is estimated that one thousand dollars or more will be necessary to publish the volume of some five hundred pages required to accommodate the papers in a complete form. It is much to be regretted that the exposition did not provide for the publication in good style of the reports of all the congresses auxiliary, for they mark (not in all cases, however, as they should mark) the status of progress in all departments of culture at the present day. No other memorial can hope to compare in permanence and in completeness of record with that made possible by the art of printing, and the published memorials of this exposition must be the bases for comparisons of progress at all succeeding Columbian expositions and, for that matter, all other like celebrations.

ANTHROPOLOGY AT THE MADISON MEETING.

BY W J MCGEE.

The forty-second meeting of the American Association for the Advancement of Science, held at Madison, Wisconsin, August 16–23, 1893, fell below the average of recent years in attendance, but, thanks to the thoughtful hospitality of the good people of the lake-side city, was memorably pleasant. Moreover, the scientific interest of the papers and discussions was quite up to if not above the average, and anthropology received, perhaps, the lion's share of attention. A vice-presidential address, the customary popular lecture, and thirty papers presented before the anthropologic section, besides numerous discussions of importance, indicate the position taken by this science at the meeting. It may be added that while Section H was, through the energy of Vice-President Dorsey, always prompt in beginning work, it was the last to adjourn. The average attendance at sectional meetings, both maximum and mean, was also reached in this section. Thus, as an indication of activity in the branch of knowledge most closely related to humanity, and as a measure of popular interest in anthropology, the Madison meeting was highly gratifying.

The formal address by Vice-President J. Owen Dorsey represented the results of recent researches concerning the Biloxi Indians of Louisiana, of which a few remnants only exist. During Mr. Dorsey's visits to the survivors of this people, in 1892 and 1893, he acquired a quantity of linguistic, mythologic, and sociologic material sufficient to form a volume of several hundred pages, and the address comprised the gist of this material. The significance of the appellations and other denotive terms of the tribe; the earlier habitats and migrations; the past and present condition of the people with respect to habits, customs, and numbers; and the kinship system and marriage laws were severally treated in a philosophic way. Special attention was given to the Biloxi language, which was discussed with respect to phonology, morphology, semasiology (or sematology). In the course of the discussion it was shown

that certain generalizations of Duponceau and Brinton are not applicable to the Biloxi language. Numerous examples of case-endings for nouns and pronouns were given, together with many forms of the imperative mood for the verb, which is highly complex in that the sexes of the person addressed and the speaker are both represented. The morphology of the language is characterized by dependent clauses; a typical sentence given in the address (page 16 of the separate printed copy) comprises five dependent clauses in addition to the stem-clause, while the corresponding English consists of four sentences. The semasiology (defined as "the science of the development and connections of the meanings of words") of the Biloxi is instructive, affording numerous examples both of word-building and onomatopeia. About 100 onomatopes have been recorded. Various examples of the curious folklore and mythology of the Biloxi tribe were given.

Among the author's conclusions are the following: (*a*) The Biloxi is one of those languages which is characterized by complexity; (*b*) in the "ground plan" or "plan of ideas" the Biloxi differs notably from the Iroquoian tongues and the Athapascan languages of Oregon; (*c*) the relationship of the Biloxi to other Siouan tongues has been fully established, although it differs from most of the Siouan languages in various respects; (*d*) it would seem that at least a thousand or fifteen hundred years must have elapsed since the separation of the Biloxi, Hidatsa, and Tutelo people from the Siouan tribes found by Captain John Smith in eastern Virginia.

As usual, two or three other vice-presidential addresses touched more or less directly on anthropology. In his discussion of "Geologic Time as indicated by the sedimentary Rocks of North America" before Section E, Vice-President Walcott based a new and highly suggestive estimate of the age of the earth on the accumulation of limestones in the different American formations, deducing a value intermediate between that commonly reached by physicists and astronomers on the one hand and by dynamic and biotic geologists on the other; the estimate for the Cenozoic, including the Pleistocene, being about three million years, and for the entire post-Archean about forty-five million years. In the Section of Economic Science and Statistics Vice-President W. H. Brewer presented a highly suggestive discussion of the "Mutual Relations of Science and Stock-breeding," in the course of which he emphasized the fact

that many domestic animals have been completely reconstructed, practically recreated, through human intervention, and suggested the possible extension of this most beneficent intervention to the human animal. Vice-President Henry F. Osborn, before the Section of Zoölogy, gave a masterly address on "The Rise of the Mammalia," in which the character and conditions of evolution were elucidated, and the kinship of the human organism to lower ancestral types was incidentally pointed out. Before the section of Botany, Vice-President C. E. Bessey, treating of "Evolution and Classification," touched on the influence of human activity in modifying plants; and as an effort to introduce strictly genetic classification in one of the two great branches of life on the earth the address was well worthy the attention of anthropologists.

Dr. Daniel G. Brinton's evening lecture, delivered in the Assembly chamber of the Capitol, was an admirable popular exposition of present knowledge concerning "Early Men." After a summary statement of the data and methods of anthropology, the author discussed the evidence as to the original home, the antiquity, and the dispersion of mankind. He gave reasons for holding that the river gravels and caves of France and Belgium, and perhaps the Iberian peninsula and the British isles, yield the oldest records of human existence; and after making due allowances for incomplete examination of the caverns and fluvial deposits farther eastward, expressed the conviction that the earliest men of the earth came into being somewhere along the mountainous zone extending from the western footslopes of the Alps through the Himalaya nearly to the borders of the Yellow sea. Emphasis was laid on the fact that while certain characters of these earliest men are more distinctly simian and pithecoid than those of modern times, yet their bones and art products indicate that they were distinctively men, thinking and speaking, possessing upright stature, acquainted with and at least in partial control of fire, and masters of many rude but essentially human arts; so that the researches of archeology have made little progress in tracing mankind toward the lower ancestry of necessary hypothesis. By the association of human relics with glacial and aqueoglacial deposits and with extinct or displaced animals, the date of human origin in the Eurasian continent was thought to be carried backward in time beyond the last ice invasion of the Pleistocene. Touching on the question of the peopling of the Ameri-

can continent, the author gave consideration to the indications of Asiatic invasion across Bering strait or directly over the northern Pacific, yet held with some strength to his previously expressed opinion that the original immigration was across the northern Atlantic during an earlier geologic period when the arctic climate was milder and the arctic lands more extensive than today.

The following papers were presented to the Section of Anthropology:

Songs of Sequence of the Navajos (illustrated by the phonograph); Dr. Washington Matthews.

The Results of Excavations at the ancient Argillite quarries recently discovered near Delaware river, on Gaddes run (illustrated by specimens); H. C. Mercer.

Indian Migrations; Dr. C. Staniland Wake. (Read by Secretary Moorehead in absence of the author.)

The instinctive Interest of Children in Bear and Wolf Stories; Professor W. H. Brewer.

The Delicacy of the Sense of Taste among Indians (with statistical tables); E. H. S. Bailey.

Caches of the Saginaw Valley (illustrated by specimens); Harlan I. Smith.

Is the Polysynthesis of Duponceau characteristic of American Languages? J. N. B. Hewitt. (Read by title in absence of the author.)

Primitive Woman as a Poet; A. F. Chamberlain. (Read by abstract in absence of the author.)

Some Drawings by Kootenay Indians; A. F. Chamberlain. (Read by abstract in absence of the author.)

Psychology at the World's Fair (illustrated by schedules); Professor Joseph Jastrow.

Some Account of the Purification Ceremonies and the Sacred Stone in use among the Mission Indians of California (illustrated by specimens); H. N. Rust.

The Indian Stone Adzes (illustrated by specimens); H. N. Rust.

Some facts concerning the Obsidian Blades called Swords, from northern California (illustrated by specimens); H. N. Rust.

Observations in regard to the use of Argillite by prehistoric People, made from Explorations of ancient Village Sites in the Dela-

ware valley (illustrated by specimens, diagrams, and maps); Ernest Volk.

The Evidence of glacial Man in America; G. Frederick Wright.

The Antiquity of Man in America; W J McGee.

The prehistoric Man of New Mexico; H. S. Herrera. (Read by title in absence of the author.)

Buried Deposits of Hornstone Disks; J. F. Snyder. (Read by abstract in absence of the author.)

A Shawnee Town and its Exploration; W. E. Myer. (Read by abstract in absence of the author.)

Remarks on Sheet Copper Designs from the Hopewell Group, Ohio (illustrated by diagrams); Warren K. Moorehead.

The Ancient Necropolis of Ancon, Peru (illustrated by diagrams); George A. Dorsey.

Another ancient Source of Jasper Blade Material east of the middle Alleghanies (illustrated by specimens); H. C. Mercer.

Remarks on a Mexican Calendar System (illustrated by diagrams); Dr. Daniel G. Brinton.

Theory of Primal Shaping Arts (illustrated by diagrams); Professor W. H. Holmes. (Read by W J McGee in absence of the author.)

Indian Names for the Four Winds and Four Quarters; J. Owen Dorsey.

Notes for an archeologic Study of La Plata Island, Ecuador; George A. Dorsey.

A Ceremony of the Quichua Indians of Peru; George A. Dorsey.

The Sacrifice of the White Dog; C. A. Hirschfelder. (Read by title in absence of the author.)

The Relation between Mythopeia and Euhemerism; Merwin-Marie Snell. (Read by title in absence of the author.)

Revision of Calendar; Ada M. King. (Read by title in absence of the author.)

As usual at recent meetings of the Association, the subject of American archeology received much attention. Perhaps foremost in permanent value among the papers on this subject was that by Professor Holmes on "Primal Shaping Arts." The author's conclusions are based on extended study of American aboriginal art products and elaborate experiments in reproduction of the primitive forms. The phenomena involved in the shaping arts are classified

(1) by material; (2) by shaping acts or processes; (3) by function or use of the products; (4) by culture stage of the artist; (5) by time periods and order of development, and (6) by peoples or races. The shaping arts themselves are studied to greatest advantage by means of the processes of manufacture, which are classified as follows:

1. Fracturing processes: (*a*) Breaking
   (*b*) Splitting
   (*c*) Flaking
   (*d*) Chipping
2. Battering processes: (*a*) Bruising
   (*b*) Pecking
3. Abrading processes: (*a*) Grinding
   (*b*) Rubbing
   (*c*) Polishing
4. Incising processes: (*a*) Cutting
   (*b*) Scraping
   (*c*) Picking
   (*d*) Piercing or boring.

It was then shown that the order of development of arts was determined primarily by men's needs, secondly, by the conditions of their environment; and in this stage the inductive research is aided by deductive reasoning, based on the known course of human evolution in its later stages. Thus, among the primary needs were (1) the need of food; (2) the needs of defense and offense; (3) the needs of shelter and clothing, etc. The need for food-getting alone would lead to the development of varied activities, the nature of which would depend on the character of the available food sources as well as on the character of materials available for employment in the nascent arts. Now, both inductive research and deductive reasoning indicate that primal man employed mainly two great classes of stone implements, viz., (1) rounded or blunt stones for throwing, beating, crushing, battering, grinding, etc., and (2) sharp-edged or pointed stones for cutting, digging, piercing, scraping, etc. This was the primitive stage of development or incipient organization, in which many functions are performed by one organ. Then, in the development of stone art, as in biotic evolution, specialized forms came into being, and the implements were differentiated and multiplied until there came to be a multiplicity of forms, each

designed to perform a different function. Now, in tracing the development of form and function, a number of stages may be recognized in the art products: There is the stage of single-act products, *e. g.*, pebbles cleft by a single blow; then multiple-act products, *e. g.*, pebbles or cores fractured and shaped by successive blows; and, finally, sequence-act products, including flaked-chipped and ground-polished implements, in which the simple primal acts prepared the way for more complex acts. Juxtaposing these stages of complexity in shaping acts with the cultural stages of mankind, beginning with savagery and ending with enlightenment, it is evident that the simplest acts correspond to the lowest culture stage; and, proceeding with this comparative investigation, the author developed and illustrated graphically a scheme of evolution of the shaping arts expressed in culture stages. From this scheme it appears that the initial shaping arts were those of the fracturing processes, beginning with the lowest savagery, culminating toward the highest savagery, and declining through the stages of barbarism and civilization; that the second class, comprehending the battering processes, began toward the middle of the stage of savagery, culminated early in the barbarous stage, and then declined; that the third class of arts, comprising the processes of incising, began in savagery and increased slowly through the stage of barbarism, and afterward more rapidly, continuing down to the present; and that the multiple-act or sequence-act arts, comprising the abrading processes, began feebly midway through the stage of savagery, and slowly increased with successive culture stages.

Commenting on the paper, Dr. Brinton pointed out that the scheme of culture stages and art products set forth therein departs from the accepted European classification, which is based on long continued and widely extended investigations, and that the conclusions ought not, therefore, to be accepted without careful consideration. In reply Mr. McGee, observing that the conclusions are admittedly tentative, explained that the classification is indigenous and based essentially on the phenomena of this country, to which the European classification seems in some measure inapplicable. Thus there are in America many stone objects which by European archeologists are classed on the basis of form as paleolithic and interpreted as representing a definite culture stage; but these objects occur on many sites in thousands, even in scores of tons, implying on the European hypothesis a denser savage population than con-

servative students could admit; and partly for this reason a simpler explanation of the phenomena has been adopted by a large group of American archeologists, among whom Professor Holmes is the leader. While, therefore, the classification is by no means final, it is the best thus far proposed for this country.

Mr. Mercer's communication on the ancient argillite quarries of Gaddes run represented essentially a continuation of the researches on Delaware river inaugurated by Professor Holmes. Within a few months it has been shown that in various localities within a limited distance of Trenton the aborigines quarried argillite similar to that from which the well-known Trenton "turtle-backs" are fashioned, and that at or near these quarries workshops were established in which well-shaped blades were manufactured, while the débris, including many "failures" undistinguishable in form as well as in composition from the Trenton "turtle-backs," was left behind. Some of these workshops, with attendant "failures," occur on the modern flood-plain of Delaware river, the nearest to Trenton thus far discovered being those described by Mr. Mercer. The discoveries have an important bearing on the question of the antiquity of man raised by the association recorded at Trenton.

Mr. Mercer's second communication was a detailed account of an aboriginal jasper quarry in Pennsylvania, from which material for some of the widely diffused jasper implements of Pennsylvania must have been taken.

In his account of caches in the Saginaw valley, Mr. Smith described in detail a number of caches of stone implements recently discovered by him in the eastern-middle portion of the lower peninsula of Michigan. Special and most exemplary efforts were made by the author to trace the material of which the objects were made to their sources in neighboring geologic formations and in prehistoric quarries, and these efforts were fortunately attended by a fair measure of success.

Mr. Rust exhibited some remarkably fine specimens of the stone tubes so abundant and so puzzling to archeologists on the Pacific coast, describing their connection with ceremonials of the Mission Indians of California. He also exhibited an interesting collection of stone adzes illustrating the attachment of handles of bone and wood by means of sinew and a highly tenacious gum made from native asphaltum. In addition he laid before the section a magnificent flaked and chipped obsidian blade, detailing the circum-

stances under which it was obtained from a living Indian, and mentioning the high value and superstitious significance attached to it by its former owner.

Mr. Volk presented an extended and admirable communication setting forth the results of excavations and observations made, under the auspices of the Peabody Museum, by direction of Professor Putnam, at Trenton. The occurrence of argillite "turtle-backs" and other human relics at various depths in the surface deposits was illustrated by diagrams and sections. The author personally obtained various relics from the surface soil and superficial gravels and sand beds associated therewith, the argillite objects being sometimes associated with fragments of pottery. The depth at which the objects were found was not, however, greater than that reached by the tap-roots of deep-rooted trees, while the pottery and finished implements appear to represent the work of the modern Indians.

Judging from the attendance, the most interesting discussion of the section, and indeed of the meeting, was introduced by the papers of Professor G. Frederick Wright and W J McGee, summarizing the supposed evidence of high human antiquity in this country. Professor Wright* enumerated the discoveries at Newcomerstown and Loveland, Ohio, and defended the early work at Trenton, alluding also to the discoveries at Little Falls, Minnesota, and on the Pacific coast. From these discoveries he argued at some length the glacial or preglacial age of man in America along lines laid down in recent popular publications. Mr. McGee mentioned several unpublished discoveries which at first sight appear to indicate the existence of man in this country before the end of the glacial period, and described also the finding of an obsidian implement in the late Pleistocene of Nevada, accounts of which are in print. He then contrasted legal evidence and procedure with scientific evidence and methods, pointing out that the lines of reasoning are essentially diverse, and laying down the principles that in science conclusion is not imperative unless the evidence is ample, that all scientific conclusions are tentative only, and that unsupported testimony is nugatory.

The papers by Messrs. Volk, Wright, and McGee were discussed together by Professor T. C. Chamberlin, Professor F. W. Putnam,

* Not to be confounded with the geologist of Oberlin, Professor A. A. Wright.

Dr. H. C. Hovey, Professor E. W. Claypole, Professor C. R. Van Hise, Mr. Warren Upham, and others, including the authors. Professor Chamberlin called attention to the fact that the alleged evidences of glacial man in this country enumerated by Professor Wright did not include several instances mentioned by him as indubitable in a previous publication. Using the simile of legal procedure, he pointed out that of several witnesses giving concordant testimony introduced in a previous issue a number have been impeached, admittedly with success, since they were not again brought on the stand; and from this serious decrease in the evidence adduced he argued the weakness of the case for the glacial age of man. He also brought to light a number of inconsistencies in the testimony yet retained by the advocate of high human antiquity, showing that different published statements, including the exhibit at the World's Fair, are inconsistent with each other and with the statements made at the meeting, to the extent that even the Newcomerstown discovery cannot be regarded as worthy of credence by conservative geologists and archeologists. The other cases also were discussed at some length, special attention being given to the possibility of adventitious intrusion through windfall of trees and in other ways. The general conclusion, as stated by Professor Chamberlin, is that the Newcomerstown find is indecisive without more consistent evidence than has thus far been produced, and that the various other finds are even less trustworthy as evidence of glacial man in America. Mr. Upham, on hypothetic grounds, defended the Little Falls discovery, expressing confidence in the first conclusion based on incomplete observation, despite the fact that it has since been abandoned by Professor N. H. Winchell, state geologist of Minnesota, after more extended studies on the ground in company with Professor W. H. Holmes. Professor Claypole discussed at some length the nature of evidence, scientific and legal, in general supporting the principles laid down by Mr. McGee, but urging that in the case in question the evidence should not be completely thrown out of court, and that the question should be held *sub judice*. Professor Putnam expressed confidence in the early work at Trenton, discussing at some length the question of intrusion through wind-felled trees and in other ways, giving special weight to the evidence afforded by a human skull found some years ago in the Trenton gravels by Dr. C. C. Abbott. Dr. Hovey mentioned the finding of an arrow-point in a cavern in such situation as to suggest high human antiquity,

pointing out, however, that in this case, as in those under discussion, the evidence was by no means conclusive. Professor Van Hise introduced some critical inquiries with respect to the supposed association of relics with different deposits, his remarks indicating the opinion, which seemed to prevail among the geologists present, that the supposed evidence on record is by no means sufficient to prove the glacial age of man in America.

Summing up the argument for high human antiquity, Professor Wright defended the testimony afforded by the various discoveries, extolling the legal skill of some of the finders and calling attention to affidavits made by others. The Abbott finds at Trenton were reintroduced, the elaborate researches by Professor Holmes being impugned. The principal Pacific coast phenomena were discussed in considerable detail, special reference being made to the observations by Clarence King and the vicarious records of Becker, and the Nampa imposture, detected first by Dutton and later by Powell, was again brought forward.

In closing the discussion, Mr. McGee remarked that despite the possibility that man existed in this country during at least the last ice invasion of the glacial period the *fact* of his existence at that time in America has not yet been proved beyond question. Some discoveries are open to diverse interpretation; the accounts of others are inherently weak, and the case gains no strength from the multiplication of witnesses when each new witness is as untrustworthy as the old. The important generalizations of science have always been corroborated and sustained by further research, and it was held to be especially significant that the supposed evidences of great human antiquity in this country have not been corroborated or sustained by more extended and more critical researches, but that in all save one or two cases later research has only served to show that the first interpretation was erroneous.

Mr. Moorehead's communication was illustrated by figures showing the outlines of copper objects found in the Hopewell group of mounds. The designs were probably or certainly cut out of thin sheets of copper, though it was not determined whether the sheets were hammered or rolled, and while the designs conform in such manner as to show that set patterns are represented, there is sufficient variation to indicate that the objects were shaped individually

and not stamped by dies. Special attention was directed to designs representing the svastika or fylfot cross, which acquire peculiar interest in view of recent assertions that the svastika is confined to the Eastern hemisphere. In discussing the paper, Dr. Brinton described another form of the svastika, and Mr. G. A. Dorsey described a form found by him while investigating the prehistoric cemeteries of Peru. Vice-President Dorsey also called the attention of the section to another variant, which appears on the war-chart of the Kansa tribe, the survivors of which are now in Indian Territory. A copy of this chart was given to the speaker in 1882 by a hereditary chief of a war gens of the Kansa tribe, who said that it had been in the possession of his ancestors for a long period, and explained that the svastika thereon was a wind symbol.

The principal paper by Mr. G. A. Dorsey was a description of the ancient necropolis of Ancon, Peru, which is in part reproduced in the anthropologic building of the World's Fair. The area assigned to the necropolis is laid out into irregular patches, generally one to three yards across, by means of little embankments of gravel. Each patch may be regarded as a cemetery lot, and is occupied generally by the remains of one, though sometimes of two or more individuals. The bodies are desiccated and form more or less perfectly preserved remains, usually in a squatting posture, with knees drawn to the chin. Each is wrapped in cotton and afterward in many layers of cloth or matting, the whole securely tied by strong ropes.

In his paper on the calendar system of Central America and Mexico, Dr. Brinton remarked that at the time of the Spanish conquest all the semi-civilized peoples of this continent made use of the same calendar, despite the great diversity of their languages. This system is absolutely unique, nothing like it being found elsewhere in the new world or anywhere in the old world. Its basis is a month of twenty days, of which thirteen make a nominal year, and eighteen, plus five days, the solar year. Earnest efforts have been made by writers to detect in these periods the results of astronomic observations, either lunar or solar, or on Venus or other planets, or on constellations, but up to the present time without positive results. The twenty-day period is generally conceded to have been based on the vigesimal system of counting, which was common to all these tribes. Each day has a name and a number, and the author has found by a study of these names that they have

the same meaning in all those languages in which they are preserved. This coincidence proves a common origin, but the place of origin has not yet been established. The author's research leads to the opinion that the system originated with one of the Maya tribes in or near Chiapas. Moreover, he finds reason to suppose that the calendar was at first purely divinitory and astrologic, subsequently becoming a time-count, with a rather awkward adaptation to the solar year of lunar months, such as is found in the northern hunting tribes. The day names are symbolic and appear to be arranged in a sequence corresponding to the ordinary history of human life from birth and youth up to old age and death.

In connection with the work of the section on archeology an excursion was made to examine the Indian mounds about the northern shore of Lake Mendota. The mounds examined include the ordinary conical or dome-shaped tumuli and effigy mounds, together with embankments, all characteristic of the Wisconsin district.

The contributions to psychology and somatology were limited in number, though of great interest. Dr. Jastrow described at length the psychometric methods of the anthropologic laboratory in Chicago, setting forth the objects and purposes of the work. Professor Brewer described his observations on the lively interest manifested by children, and to a less extent by adults, in stories of bears and wolves. He expressed the opinion that, while a part of this interest may be ascribed to the brevity and force of the monosyllabic names, the chief and real reason for the predominance of the idea is to be found in the instinctive fear of these animals inherited from ancestors in parts of Europe in which they abounded at the beginning of civilization. Mr. Bailey's paper on the delicacy of the sense of taste among Indians also attracted much attention. The author presented the results of a large number of tests made on Indian boys and girls, showing by percentages the delicacy of taste for acid, bitter, and sweet substances. This was supplemented by similar tables showing the results of like tests made on an equal number of white boys and girls. While the results of the tests show some aberration, they indicate on the whole a materially higher sensibility among the white youth.

One of the most interesting papers laid before the section was that by Dr. Washington Matthews on the songs of sequence of the

Navajos. The author recited a Navajo legend, interspersed with questions asked by the children of the principal characters concerning the origin and peculiarities of vegetation, etc., together with the parent's replies in the form of mystic songs, the latter given by the phonograph from cylinders bearing records of the songs sung by the Indians themselves in their own tents. In addition to the interest of the subject, the communication was important as illustrating the uses and advantages of phonographic instruments in ethnologic work.

Vice-President Dorsey's paper on Indian names for the four winds and four quarters summarized personal observations among the Omaha, Ponka, Osage, Kansa, Kwapa, and Biloxi tribes of the Siouan stock, and the Tutu tunne of Oregon representing the Athapascan stock, in comparison with the Dakota equivalents recorded by Riggs. In some of these languages the names for the cardinal points differ from those of the corresponding winds. In the Tutu tunne dialect there are distinct names for the northeast, southeast, southwest, and northwest winds, as well as for the corresponding quarters, these names being compounds of the names of the four cardinals.

The paper by Mr. Hewitt was an important contribution to knowledge of linguistics. It is given in full elsewhere in this number of the AMERICAN ANTHROPOLOGIST, together with remarks by Mr. Dorsey designed to show that sundry assertions made by Duponceau and his followers are not applicable to the Siouan tongues and certain other languages.

The officers of the Section of Anthropology elected for the ensuing year are: Vice-President, Dr. Franz Boas; Secretary, Professor A. F. Chamberlain. For the place of meeting in 1894, Brooklyn was provisionally chosen, with the condition that some other eastern city may be selected in its stead by the Council. Preliminary action was also taken with the view of holding the 1895 meeting in San Francisco or elsewhere on the Pacific coast.

Anthropologists throughout the world will doubtless be gratified at the selection of one of their number as the next President of the Association. The honor of election to this office was conferred on Dr. Daniel G. Brinton, of Philadelphia.

A QUARTERLY BIBLIOGRAPHY

OF

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CHARLES COLCOCK JONES.

Col. Charles Colcock Jones, who died at his home in Augusta, Georgia, July 19, 1893, was a model citizen and a man of national reputation as an orator and scholar. He was born in Savannah, Georgia, on the 28th of October, 1831, his boyhood being spent in Liberty county, Georgia, on the estates of his distinguished father, the Rev. Charles C. Jones. The early studies of Colonel Jones were pursued at home under tutors and partly under the immediate supervision of his father. He took a partial course at South Carolina College, Columbia, and graduated with distinction from Nassau Hall, Princeton, New Jersey, in 1852, and in 1855 from the Harvard Law School with the degree of LL.B.

In 1854 Colonel Jones began the practice of law in Savannah, and on the breaking out of the civil war, in 1861, was mayor of that city. He served through the war as an officer of artillery with particular distinction, and in 1865 removed to New York city, where he practiced law for ten years, continuing with renewed vigor his career as a writer in the departments of history and science. He returned to Georgia in 1877, taking up his residence in the suburbs of Augusta, where, in addition to his professional labors, he found time to prosecute his favorite studies, producing numerous works of value and some of high importance.

His historical and biographic works are numerous and valuable, covering nearly all periods of American history, though referring in the main to the south and more especially to his native State. Of especial interest to ethnologists may be mentioned: Dead Towns of Georgia, 1878; De Soto's March through Georgia, 1880; Negro Myths from the Georgia Coast, 1888; and History of Georgia, 1883, in two volumes, the first treating of the aboriginal and colonial periods and the second dealing especially with the revolutionary epoch and the organization of the State.

The archeologic and antiquarian works of Colonel Jones have contributed more, perhaps, than any other group of his numerous publications to establish his national and international reputation. The following examples of this class are particularly worthy of mention: Aboriginal Studies in Georgia; Primitive Manufacture of Spear and Arrow-points on the Savannah river; Silver crosses from an Indian grave mound; and Primitive storehouses of the Creek Indians, published in the Smithsonian reports. Others are: Monu-

mental Remains in Southern Georgia, Savannah, 1859; Ancient Tumuli on the Savannah river, New York, 1868; Ancient Tumuli in Georgia, Worcester, Massachusetts, 1869; and Antiquities of the Southern Indians, New York, 1873. The last-mentioned work, a volume of 520 pages, fully and handsomely illustrated, is the most important of these and gave him a world-wide reputation. It is a hand-book with all students of American archeology and altogether one of the most valuable contributions yet made to the subject. During the last decade this work has been in a large measure rewritten by the author and much new material and many important illustrations added.

It was but natural that the historian and archeologist should turn his attention toward the collection and preservation of the materials of history and archeology. His collections of autographs, autograph letters, and portraits illustrative of American history, and especially of the revolutionary period, are extensive and of great value. His library comprises some 4,500 well-selected volumes, 200 of which have been illustrated by himself at great expense. It is especially rich in works relating to Georgia. Of particular interest and value to the scientific world are his collections of aboriginal relics, which embrace some 20,000 objects illustrative mainly of the arts, historic and prehistoric, of the southern Indians. These valuable treasures are now in possession of his son, Mr. Charles E. Jones.

It is remarkable that from one family should spring two sons, Colonel Jones and his younger brother, Dr. Joseph Jones, now of New Orleans, with tastes turned and abilities exerted in a direction so rare—two men to whom the science of man should owe more than to all others in the south combined. Colonel Jones was a member of numerous literary and scientific societies at home and abroad and the degree of LL.D. was twice conferred upon him.

Physically Colonel Jones was a man of exceptionally fine type; in character he was noble and in disposition gentle and charitable. His intellectual endowments were of the highest order, and in the varied field of his activities the community, the state, and the country will not readily find an equal. His power as an orator was commanding, his literary style fluent and forcible, his judgment all but unerring, and his energy and industry the marvel of his associates. His many works are a fitting and lasting monument to his memory.

W. H. Holmes.

NOTES AND NEWS.

AMONG THE DISTINGUISHED FOREIGNERS who came to America to study the World's Columbian Exposition in Chicago were Prince Roland Bonaparte and Dr. Paul Topinard, who were in America during the months of April and May. Both of these gentlemen have visited our country previously and they are both familiar with the English language.

On returning to Paris, Dr. Topinard contributed to *L'Anthropologie* a paper of fifty pages upon the science of anthropology in the United States. In his opening chapter he tells us that when a boy he lived eight years in the States, and confesses that the country impressed him more favorably then than it does now, which may be attributed either to a change in the country itself or to transformations which have taken place in the Doctor during the last forty years. Dr. Topinard gives a tolerably good running review of the science of anthropology in America, though he omits the names of Albert Gallatin, Horatio Hale, Squier and Davis, the two Bancrofts, Dr. Washington Matthews, Colonel Charles C. Jones, and others whom he might include in this honored list.

In speaking of the care bestowed by the National Museum upon costume and the neglect of anatomical characters in setting up the figures of Indians, it is quite certain that the Professor has overlooked the immense albums of Indian photographs in Washington, taken front and side face, after the method of Prince Bonaparte and other European ethnologists. There is a standing order by the Commissioner of Indian Affairs that every Indian delegation that comes to Washington shall be so photographed at the Bureau of Ethnology, and these instructions are carefully carried out.

It is quite true that the subject of craniometry has been neglected in America recently, for the reason that the results have not been satisfactory and seem to be rather a kind of will-o'-the-wisp, which ever leads the inquirer on to more numerous and intricate measurements. Be that as it may, the subject has received due consideration at the World's Columbian Exposition, under the management of Professor Putnam.

In the enumeration of collections relating to anthropology and ethnology Dr. Topinard has omitted those from Cleveland, Cincinnati, St. Louis, and San Francisco. He speaks in a very appreciative way of the work done in America, and commends especially the labelling of material and the efforts made in all the collections to make them as available as possible for instruction.

In speaking of the separation, at Washington, of the archeological and ethnological specimens, a remark is made that these two sciences are really one, and that the material ought not to be kept apart. This is no doubt true. There is no place in the world where this unity of the two sciences is more strenuously maintained than it is in the city of Washington.

Perhaps the most important point in Dr. Topinard's paper is his summary of the discussions which have taken place recently regarding early man in America. In all his remarks upon this subject he takes the side of Dr. Abbott, Dr. Cresson, Professor Wright, and other advocates of the high antiquity of man, and has wholly failed to comprehend the purport of numerous recent and striking developments pointing in the other direction. Professing to approach the subject with unbiased mind, his writing bears every evidence of the dominance of preconceived opinions.

There are two distinct questions now agitated by American anthropologists, based on the recent investigations of Mr. W. H. Holmes. The first of these relates to the status of culture indicated by the rude paleolith-like flaked stones, thought by the finders to have been obtained from glacial formations. These objects are, on closer examination, found in every case to be identical with the ordinary rejects of the arrow-maker of the region concerned, and our archeologists argue that since these are not verified implements they are not, even if found in the gravels, a competent index of the grade of culture reached by the peoples who made them. Up to this time no reliable proofs of the actual status of the hypothetic glacial culture have been obtained. The whole number of rudely flaked stones reported from the gravels in place does not exceed one hundred, and the finders have, as a rule, been either unskilled observers of glacial phenomena or without a due appreciation of the consequences of superficial observation.

The second question relates to the evidence of man's antiquity in America. Mr. Holmes has carefully and systematically examined

the testimony furnished by Dr. Abbott in the Delaware valley, Dr. Metz and Mr. Mills in the Ohio valley, and Miss Babbitt on the upper Mississippi—the only evidence of importance yet presented. The result is that a large part of the evidence is wholly thrown out, and the remainder is shown to be so meagre and embarrassed as to leave the affirmative proposition practically unsupported. The indications point to the conclusion that the finds of shaped stones referred to the gravels in place are modern shop refuse, involved in the talus deposits in comparative recent times.

Dr. Topinard, in his review, does not reflect the status of conviction with respect to this question now prevalent among its adherents in America. This position seems to be that of waiting for new and confirmatory evidence. This is indicated by the fact, not observed by our learned visitor, that there was not when he was in Chicago, and there is not there now, one single American specimen concerning which the owner or exhibitor was willing to risk his reputation by calling it definitely a "paleolith."

This new condition of affairs is due largely to the researches of Mr. Holmes, who while demonstrating the total inadequacy of the evidences of glacial paleolithic man in America has presented his views with commendable modesty. The time has come, however, when the earnest student of the history of man should be correctly informed, and this leads me to make, with great diffidence, a suggestion. Dr. Topinard calls Dr. Abbott the Boucher de Perthes of America. No one has been more diligent in his archeological work than Dr. Abbott, and he himself has said that he laid no claims to infallibility in regard to any provisional conclusions to which he had come concerning the geological horizon of the Trenton finds. In the light of what has recently transpired in America it would be well for our friends in France specially to review the grounds of their opinions with reference to such excavations as those at Abbeville and Chelles. I do not come to the hasty conclusion that European archeology is to be written in the light of American discovery, but I do wish to declare that a sufficiency of new light has been thrown upon our work in this continent to make it worth while for our friends abroad to examine afresh the foundations of their belief. It is quite within the limits of possibility that Boucher de Perthes may turn out to have been the Dr. Abbott of France.

Dr. Topinard speaks very kindly with respect to the work of American confrères, and the want of appreciation of the latest archeological labor done here is to be attributed to his own predilections, to his intimate association with the friends of paleolithic man when he was in America, and to his very short stay in the opening month of the Exposition, when so little of the precious material was really arranged.

Dr. Topinard should come again when he can remain longer and when he will have time to go patiently over the evidence brought out in recent explorations of the Bureau of Ethnology.

OTIS T. MASON.

MASHONALAND TEMPLE ORIENTATION.—I have examined two ruined temples of the Zimbabwe period and style, situated at the confluence of the Lotsani and Limpopo rivers, in south latitude 22° 39′ 42″, east longitude 28° 16′ 30″. The temples show the same system of orientation and geometrical construction as the great temple at Zimbabwe. I cleared the bush from the more perfect of the two temples of the Lotsani and made a careful measurement of many of the radii of the one curve of which it consists. I oriented directly from the center to the curve and saw the sun from that point set just to the left of the middle of the main doorway. On correcting the position of the sun for its decrease in declination during the seventeen days which had elapsed since the solstice, I found that it would set at the solstice exactly in a line with the center of the arc and the middle of the doorway. This direct measurement and observation should remove any doubt as to the applicability of our theory of the construction of the plans of these temples.—*Swan, in the Geographical Journal, London, Sept., 1893, pp. 263, 264.*

FINGER PRINTS IN INDIA.—The commander-in chief of the military forces of India has approved the proposal to employ impressions in ink of the fore, middle, and ring fingers of each recruit as a means of identification.

BOOK NOTICE.

Boehmische Korallen aus der Goetterwelt: Folkloristische Boerseberichte vom Goetter-und Mythenmarkte. Von Friedrich S. Krauss. (His temporibus satiram scribere non difficile.) Wien, 1893. Verlag der Gebrueder Rubinstein (vii Neubaug, 29). Druck von Philipp & Kramer, Wien. 8vo, pp. viii–147.

The title of this latest work of Dr. Krauss, the distinguished Slavic ethnologist, requires some explanation for western readers. "Bohemian corals" is a term used in Austria to designate brass beads, trumpery jewelry, and other things of deceptive value, about equivalent to that of our own wooden nutmegs. In this book of about 150 pages the doctor has turned aside from his usual labor of love in elucidating the rich folklore and epic traditions of Servia and Croatia to produce one of the bitterest satires it has been our fortune to read for a long time. To those who know the conditions under which Krauss and other gifted men of his race exist in Europe the reasons for much of this bitterness are not hard to understand.

In the first part he discusses at length several philologic "corals." Among others he tells us of a learned professor whose ambition it was to produce a monumental dictionary of the South Slavic dialects, and who was accustomed to make every casual stranger from an out-of-the-way district stand and deliver whatever he had in the way of obscure words or phrases. On one occasion he got hold of the doctor's servant and, according to his usual method, set him down before a bottle of wine, reinforced by fifty kreutzers, and called upon him for "uncommon words." Thus importuned, the rascal, as he himself afterward boasted, set his brains to work to "invent such words as never were heard," and when the doctor afterward visited the professor he found him in ecstasies over having obtained "sixteen entirely new words in a single hour!"

Another instance is that of a Gallo-Roman figure bearing for an inscription the single word *Encina*, which for some time was the subject of learned controversy among French savants. One asserted that it represented the Gallic god of death, while another proved by

the inscription that it was instead an image of the deity of fate or necessity, and bolstered up his opinion with philologic roots and analogies and rules for consonantal changes, from Sanskrit down to Cornish, to the extent of several pages, until it was discovered that the antique was modern, and that the mysterious inscription was simply the name of the maker, who did business at 56 Boulevard Montparnasse, in Paris.

The rest of the book is largely taken up with a sarcastic criticism of an "Introduction to the History of Slavic Literature," by Dr. Gregor Krek, professor of Slavic philology in the University of Graz. The professor, partly, it seems, from personal animus, had passed strictures upon some of the doctor's earlier works in the same field, and the doctor retaliates by dissecting his book from end to end, challenging not only his acquaintance with Slavic mythology, but also his knowledge of the languages involved.

Incidentally he gives us some curious etymologies of geographic or national nicknames. In Servia the Germans are called *Wosokter*, from *Was sagt er*, "What does he say!" the expression most frequently heard from the Germans when addressed in the strange language of the country. The German-American Jews know the Irish as Bezimer, or "egg people," from the fact that their German name *Irlaender* suggests *Eierland*, or "egg land." In the same way Slavonia and Croatia are sometimes known as *Schweine-land*, or "hog land," from a misconception of the meaning of Sauland, an earlier name for that region, from its proximity to the river Sau or Save. This reminds one of the process by which the Spanish Rio de las Animas Perditas became the French Riviére Purgatoire and finally the American "Picketwire."

JAMES MOONEY.

"PIN-WELLS AND RAG-BUSHES."—In a paper on this subject, read before the British Association by E. Sidney Hartland, it was suggested that the object of the usages was union with the divinity, to be achieved by the perpetual contact with the god of some article identified with the worshipper.

THE

CITIZENSHIP PRIZES

OF THE

ANTHROPOLOGICAL SOCIETY OF WASHINGTON

NOTICE OF POSTPONEMENT

At the request of many correspondents, it has been decided to extend the time for the preparation of the essays offered in competition for the Citizenship Prizes from November 1, 1893, to March 1, 1894.

In order that competitors whose essays have already been submitted may not suffer by the extension, it has been provided that those who desire may withdraw and modify or rewrite their essays. On application to Mr. Weston Flint, 1101 K street N. W., Washington, D. C., essays already in hand or received up to November 1 will be mailed postpaid to authors, with return postage.

The Commissioners of Award, to whom will be submitted the essays offered in competition for the Citizenship Prizes of THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON, are as follows;

Anthropologist: Dr. DANIEL G. BRINTON, of the University of Pennsylvania;

Educator: Dr. DANIEL C. GILMAN, President of Johns Hopkins University;

Jurist: MELVILLE W. FULLER, Chief Justice of the United States Supreme Court;

Statesman: ADLAI E. STEVENSON, Vice-President of the United States;

Not specified: Dr. ROBERT H. LAMBORN.

All other conditions of the competition remain unchanged.

W J MCGEE,
Chairman Prize Committee.

OTIS T. MASON, *President.*
WESTON FLINT, *Secretary Board of Managers.*

WASHINGTON, D. C., *October 25, 1893.*

INDEX TO VOLUME VI.

Page.

Aboriginal remains of the Piedmont and valley region of Virginia. 415
Abstract of proceedings of the Anthropological Society..... 218
Africa, eastern, slavery in..... 136
American Folk-lore Society..... 64
American Indians, polysynthesis in the languages of the..... 381
Ancient graves of the Vazimba..... 69
Annamite betel-chewing and salutation..... 422
Anthropologic literature, bibliography of..... 108, 211, 331, 449
Anthropology at the Madison meeting..... 435
Anthropology in America, Topinard on..... 459
Archeologic explorations in Michoacan, Mexico..... 79
Archeologic find in Arizona..... 283
Archeological verification of a Tusayan legend..... 363
Are the Maya hieroglyphs phonetic?..... 241
Arizona, recent archeologic find in..... 283
Arizona, prehistoric irrigation in..... 323
A-wa'-to-bi: An archeological verification of a Tusayan legend..... 363

Babcock, William H. On geographic nomenclature of the District of Columbia..... 29
Bechuanaland, absence of crime in..... 282
Bell, Alexander Melville. On simplified spelling..... 162
Betel-chewing by the Annamite..... 422
Bibliography of anthropologic literature..... 108, 211, 331, 449
Blodgett, James H. The rural school problem..... 71
Blood cement used by the ancient Hurons..... 322
Boas, Franz. Notes on the Chinook language..... 55
Borrowed Indian songs..... 376
Bourke, John G. Primitive distillation among the Tarascoes..... 65
Brinton lectures..... 206
British New Guinea, stone-axe currency in..... 84

Canary islanders, whistle language of the..... 115
Central American ceremony which suggests the snake dance of the Tusayan villagers..... 285
Chamberlain, A. F. Further notes on Indian child-language..... 321
Chinook language, notes on the..... 55
Citizenship prizes of the Anthropological Society..... 223, 330
Columbian historical exposition in Madrid..... 271

Page.
Congress of anthropology at World's Fair..... 423
Cranial deformities in Toulouse..... 320
Crime, absence of, in Bechuanaland..... 282
Cult society, Menomoni..... 407
Currency, stone-axe, in British New Guinea..... 84

Deadly microbe and its destruction 15
Distillation, primitive, among the Tarascoes..... 65
Distribution of stone implements in the tide-water country..... 1
District of Columbia, geographic nomenclature of the..... 29
Dorsey, J. Owen. Rising and falling of the sky in Siouan mythology, 64; On polysynthesis in Indian languages..... 403
Dutcher, B. H. Piñon gathering among the Panamint Indians.... 377

Election, the last town, in Pompeii..... 225
Evolution of the art of working in stone..... 307

Fewkes, J. Walter. A Central American ceremony which suggests the Snake dance of the Tusayan villagers, 285; A-wa'-to-bi: an archeological verification of a Tusayan legend..... 363
Finger-prints in India..... 462
Fire, time-keeping by light and..... 207
Fletcher, R. Bibliography of anthropologic literature, 108, 211, 331, 449; The poet—is he born, not made?..... 117
Folk-lore congress..... 270
Folk-lore publication..... 270
Force, M. F. Origin of certain mound relics..... 113
Fowke, Gerard. Aboriginal remains of Virginia..... 415
Frey, S. L. Historic and prehistoric Mohawks..... 277
Fuegians, physical anthropology of the..... 306
Further notes on Indian child-language..... 321

Gatschet, A. S. The navel in local names, 53; Some mythic stories of the Yuchi Indians, 279; The Terraba language, 408; The Gundestrup silver vase..... 414
Geographic nomenclature of the District of Columbia..... 29
Glacial period, man and the..... 85
Graves, ancient, of the Vazimba..... 69
Gregory, John M. On simplified spelling..... 169
Gundestrup silver vase..... 414

Harris, W. T. On simplified spelling..... 156
Hewitt, J. N. B. Signaling by means of exploding leaves, 78; Whistle language of the Canary Islanders, 115; A Kachgar-Chinese menu, 136; Slavery in eastern Africa, 136; Blood cement used by the ancient Hurons, 322; Polysynthesis in Indian languages, 381; La mensuration du cou..... 408

Page.
Hieroglyphs, Maya, are they phonetic?..... 241
Historic and prehistoric Mohawks..... 277
Hodge, F. W. Prehistoric irrigation in Arizona..... 323
Hoffman, W. J. Menomoni cult society..... 407
Holmes, W. H. Distribution of stone implements in the tide-water country, 1; On geographic nomenclature of the District of Columbia, 29; The World's Fair congress of anthropology, 423; Obituary of Charles Colcock Jones..... 457
Hough, Walter. Time-keeping by light and fire, 207; Columbian historical exposition in Madrid..... 271
Hurons, blood cement used by the ancient..... 322

Indiana Academy of Science..... 84
Indian child-language, further notes on..... 321
Indian songs, how borrowed..... 376
Irrigation, prehistoric, in Arizona..... 323

Jadeite and nephrite, means of distinguishing, by specific gravity.. 210
Japanese minor religious practices..... 376
Jones, Charles Colcock, obituary of..... 457

Kachgar-Chinese menu..... 136
Kuskarawaokes of Captain John Smith..... 409

Lamb, D. S. The deadly microbe and its destruction..... 15
Language, Chinook, notes on the..... 55
Languages of the American Indians, polysynthesis in the..... 381
Last town election in Pompeii..... 225
Leaves, signaling by means of exploding..... 78
Liberian customs..... 337
Light and fire, time-keeping by..... 207
Local names, the navel in..... 53

Madrid, Columbian historical exposition in..... 271
Makanga customs..... 70
Man and the glacial period..... 85
March, F. A. On simplified spelling..... 137
Mashonaland temple orientation..... 462
Mason, Otis T. Topinard on anthropology in America..... 459
Maturity ceremonial of Mission Indians..... 221
Maya hieroglyphs, are they phonetic?..... 241
McGee, W J. Man and the glacial period, 85; Anthropology at the Madison meeting..... 435
McGuire, J. D. On the evolution of the art of working in stone... 307
Means of distinguishing jadeite and nephrite by specific gravity... 210
Menomoni cult society..... 407

Page.
Mensuration du cou 408
Menu of the Kachgar-Chinese 136
Meyer, A. B. Means of distinguishing jadeite and nephrite..... 210
Michoacan, Mexico, archeologic explorations in 79
Microbe and its destruction..... 15
Mission Indian maturity ceremonial..... 221
Mohawks, historic and prehistoric 277
Mooney, James. On geographic nomenclature of the District of Columbia, 29; Recent archeologic find in Arizona..... 283
Mound relics, origin of certain..... 113
Mythic stories of the Yuchi Indians 279
Mythology, Siouan, rising and falling of the sky in 64

Navajo, the..... 345
Navel in local names..... 53
Nephrite, means of distinguishing jadeite and, by specific gravity.. 210
Nomenclature, geographic, of the District of Columbia 29
Notes on the Chinook language..... 55

Origin of certain mound relics 113
Owen, W. B. On simplified spelling..... 173
Owens, John G., death of..... 206

Panamint Indians, piñon gathering among the..... 377
Pennsylvania-German society..... 407
Peters, E. T. On simplified spelling..... 177
Phillips, W. Hallett. On geographic nomenclature of the District of Columbia 29
Physical anthropology of the Fuegians..... 306
Pilling, James C. On simplified spelling..... 182
Piñon gathering among the Panamint Indians..... 377
Pin-wells and rag-bushes..... 463
Plancarte, F. Archeologic explorations in Michoacan, Mexico 79
Poet, the,—is he born, not made?..... 117
Polysynthesis in Indian languages..... 381
Pompeii, last town election in 225
Powell, J. W. On simplified spelling..... 193
Prehistoric irrigation in Arizona..... 323
Primitive distillation among the Tarascoes..... 65
Prizes for citizenship essays..... 223, 330
Proceedings of the Anthropological Society..... 218

Rag-bushes, pin-wells and..... 463
Religious practices of the Japanese..... 376

Page.
Rising and falling of the sky in Siouan mythology 64
Rural school problem 71
Rust, Horatio N. Mission Indian maturity ceremonial 221

Salutation of the Annamite 422
School problem, the rural 71
Scott, Charles P. G. On simplified spelling 180
Signaling by means of exploding leaves 78
Simplified spelling: A symposium 137
Siouan mythology, rising and falling of the sky in 64
Slavery in eastern Africa 136
Smith, Benjamin E. On simplified spelling 186
Snake dance of the Tusayan villagers, a Central American ceremony which suggests the 285
Songs, Indian, how borrowed 376
Spelling, simplified: A symposium 137
Spofford, A. R. On simplified spelling 149, 195
Stephen, A. M. The Navajo 345
Stetson, G. R. Tattooing in Tunis 282
Stone-axe currency in British New Guinea 84
Stone, evolution of the art of working in 307
Stone implements, distribution of, in the tide-water country 1

Tarascoes, primitive distillation among the 65
Tattooing in Tunis 282
Terraba language 408
Thomas, Cyrus. Are the Maya hieroglyphs phonetic? 241
Time-keeping by light and fire 207
Tooker, Wm. Wallace. The Kuskarawaokes of Captain John Smith. 409
Topinard on anthropology in America 459
Toulouse, cranial deformities in 320
Trobriand islands, women of the 70
Tunis, tattooing in 282
Tusayan legend, archeological verification of a 363
Tusayan villagers, a Central American ceremony which suggests the Snake dance of the 285

Vase of silver from Gundestrup 414
Vazimba, ancient graves of the 69
Virginia, aboriginal remains in 415

Ward, Lester F. On geographic nomenclature of the District of Columbia 29
Welling, James C. The last town election in Pompeii 225

EX COMM.

Page.
Whistle language of the Canary Islanders 115
Whitney, W. D. On simplified spelling..... 190
Women of the Trobriand islands..... 70
World's Fair congress of anthropology..... 423

Yuchi Indians, mythic stories of the..... 279

BOOK NOTICES.

Evidences of Man in the Drift (Doughty), 85.—Man and the Glacial Period (Wright), 85.—Contributions to North American Ethnology, volume 7: A Dakota-English Dictionary by Stephen Return Riggs. Edited by James Owen Dorsey, 96.—Atlas der Völkerkunde (Gerland), 98.—The Land of the Cliff Dwellers (Chapin), 100.—Bibliography of the Algonquian Languages (Pilling), 101.—Bibliography of the Athapascan Languages (Pilling), 105.—Some Strange Corners of our Country (Lummis), 106.—Hindu Literature; or the Ancient Books of India (Reed), 206.—The Song of the Ancient People (Proctor), 340.—Finger Prints (Galton), 341.—The Ruined Cities of Mashonaland (Bent), 342.—Excavations in Bokerly and Wansdyke, Dorset and Wilts, volume iii (Pitt-Rivers), 344.—Boehmische Korallen aus der Goetterwelt (Krauss), 463.